Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway
San Diego, California 92132-5190

Contract No. N68711-95-D-7526

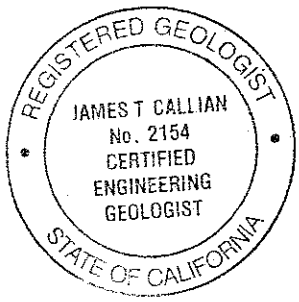
COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

CLEAN 3

REVISED FINAL
FEASIBILITY STUDY REPORT FOR
INSTALLATION RESTORATION PROGRAM SITE 1
MAGAZINE ROAD LANDFILL
NAVAL AIR FACILITY EL CENTRO
EL CENTRO, CALIFORNIA

CTO-0043/0008-1
August 2003

Prepared by:



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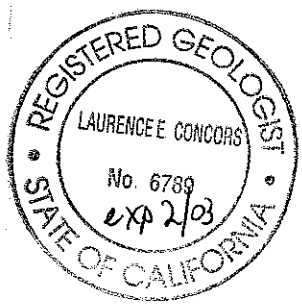

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ACRONYMS/ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
AVGAS	aviation gasoline
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
Cal. Code Regs.	*California Code of Regulations*
CEG	certified engineering geologist
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	*Code of Federal Regulations*
CLEAN	Comprehensive Long-Term Environmental Action Navy
COC	chemical of concern
CTO	contract task order
DCA	dichloroethane
DCE	dichloroethene
DF-2	diesel fuel number 2
DON	Department of the Navy
EE/CA	engineering evaluation/cost analysis
FID	flame ionization detector
Freon 113	1,1,2-trichloro-1,2,2-trifluoroethane
FS	feasibility study
GRA	general response action
IR	Installation Restoration (Program)
JP-4	jet propellant grade 4
JP-5	jet propellant grade 5
µg/L	micrograms per liter
MCL	maximum contaminant level
MOGAS	motor gasoline
NAF	Naval Air Facility
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
OHM	OHM Remediation Services Corp.

PD-680	petroleum distillate
ppm	parts per million
PRG	preliminary remediation goal
RAO	remedial action objective
RI	remedial investigation
RWQCB	(California) Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SI	site investigation
SVOC	semivolatile organic compound
SWDIV	Southwest Division Naval Facilities Engineering Command
SWWQAT	solid waste water quality assessment test
TBC	to be considered
TCA	trichloroethane
TCE	trichloroethene
tit.	title
TPH	total petroleum hydrocarbons
U.S.C.	*United States Code*
U.S. EPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound
WDR	waste discharge requirement

Section 1
INTRODUCTION

This report presents results of a feasibility study (FS) conducted for Installation Restoration (IR) Program Site 1, Magazine Road Landfill, at Naval Air Facility (NAF) El Centro, El Centro, California. Bechtel Environmental, Inc., prepared this report on behalf of the Department of the Navy (DON), Southwest Division Naval Facilities Engineering Command (SWDIV), under Contract Task Order 0043 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) 3 Program, Contract No. N68711-95-D-7526.

Cleanup at Site 1 is being conducted as part of the IR Program. The IR Program is used to identify, assess, characterize, and clean up or control pollution from past hazardous waste disposal operations and spills. The IR Program was established to comply with federal requirements regarding cleanup of hazardous waste sites, as outlined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA).

The DON, under the Defense Environmental Restoration Program, follows the United States Environmental Protection Agency (U.S. EPA) remedial investigation (RI) and FS protocols (Title [tit.] 40 *Code of Federal Regulations* [C.F.R.] 300). An RI characterizes the nature and extent of risk posed by hazardous waste sites; an FS evaluates options for cleanup.

1.1 PURPOSE AND ORGANIZATION OF REPORT

This report documents the development and evaluation of remedial action alternatives for mitigating risks to human health and the environment from chemicals of concern (COCs) at Site 1 (identified during the RI [BNI 2002a]). This report is organized as follows.

- Section 1 provides site historical information; pertinent information from the RI regarding nature and extent of contamination, contaminant fate and transport, and baseline risk assessment; and an overview of presumptive remedies for military landfills.
- Section 2 discusses remedial action objectives (RAOs) and general response actions (GRAs) and identifies and screens technology types and process options based on the RAOs and GRAs. RAOs were developed based on potentially affected media, volumes of media to be treated, and applicable or relevant and appropriate requirements (ARARs) and guidance/regulations to be considered (TBC).
- Section 3 discusses the development and screening of remedial alternatives.
- Section 4 presents the detailed analysis of the alternatives and the conclusions of the feasibility study.
- Section 5 contains reference information on publications cited
- Appendix A contains California Regional Water Quality Control Board (RWQCB) Waste Discharge Requirements for Groundwater at Site 1, a letter describing beneficial uses for groundwater at NAF El Centro and DON responses to regulatory comments on the draft version of this FS Report (BNI 2002b).
- Appendix B details ARARs.

1.2 BACKGROUND INFORMATION

Sections 1.2.1 through 1.2.4 discuss site history (including activities that may have resulted in contamination), site characteristics, and previous activities conducted under the IR Program. Section 1.2.5 summarizes the nature and extent of contamination at Site 1

1.2.1 Facility Description

NAF El Centro is an operational naval facility located approximately 7 miles northwest of El Centro, California, and 85 miles east of San Diego, California (Figure 1-1). The facility has been in operation since 1942. Approximately 600 officers, enlisted personnel, and civilians currently occupy NAF El Centro. The mission of NAF El Centro is to maintain and operate facilities and provide services and materials to support naval operations such as aviation activities and other activities designated by the Chief of Naval Operations.

NAF El Centro historically provided support to fleet squadrons that took advantage of the clear skies, dry weather, and open space found in the Imperial Valley. The facility has supported a variety of activities, mostly in support of naval parachute testing and training and aeronautical escape system testing, evaluation, and design. In the early 1990s, the NAF El Centro mission was redefined, and it became a support and training facility for military aviation units and activities. The base provides services and housing for military personnel, as well as maintaining and operating facilities to support aviation activities. Facilities associated with base activities have included a machine and welding shop, photographic laboratory, instrument laboratory, fabric shop, and transportation garage

1.2.2 Site Description

Site 1 is located in the northwestern portion of NAF El Centro, south of Magazine Road and east of Patrol Road (Figure 1-2). Site 1 is roughly rectangular and extends approximately 600 feet along Magazine Road and 400 feet along Patrol Road (OHM 1999). The landfill is covered by a multilayer cover system and is surrounded by a chain-link fence.

An unlined drainage ditch (Figure 1-2) is located approximately 30 feet north of the landfill. The bottom of the ditch is approximately 2 to 5 feet below ground surface (bgs) along the northwestern portion of the landfill, gradually deepening to roughly 10 feet bgs (approximately 60 feet below mean sea level) along the northeastern portion of the landfill.

1.2.3 Site History

Site 1 operated as a municipal landfill between 1965 and 1983. The landfill was converted from a former borrow pit. However, neither a liner nor a leachate-collection system was installed during construction. Waste management practices at the site reportedly included monthly burning to reduce the waste volume. Approximately 60 percent of the waste stream reportedly was composed of household rubbish

NEW RIVER

SITE 2
PATROL ROAD LANDFILL

SITE 1
MAGAZINE ROAD
LANDFILL

SITE 2

SITE 7
ABANDONED
FUEL FARM

08/26 RUNWAY

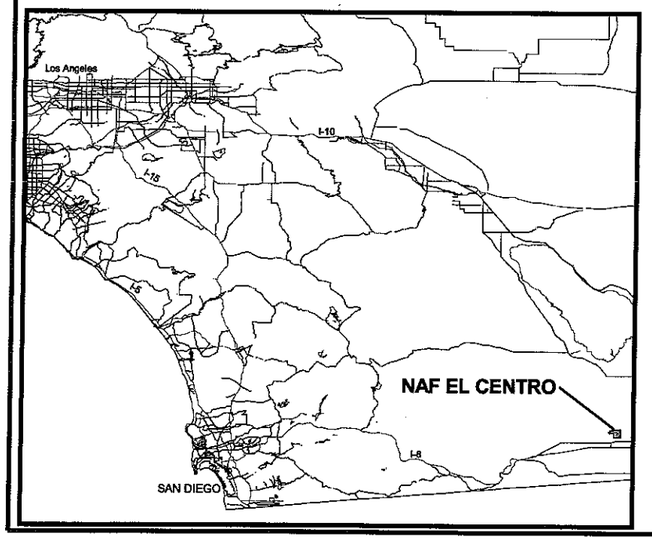
LEGEND

- NAF EL CENTRO BOUNDARY
- RUNWAY
- ROADS
- FENCE
- BUILDING
- IR SITES 1, 2 AND 7

N

1500 0 1500 Feet

REGIONAL LOCATION MAP



Site 1 Feasibility Study Report

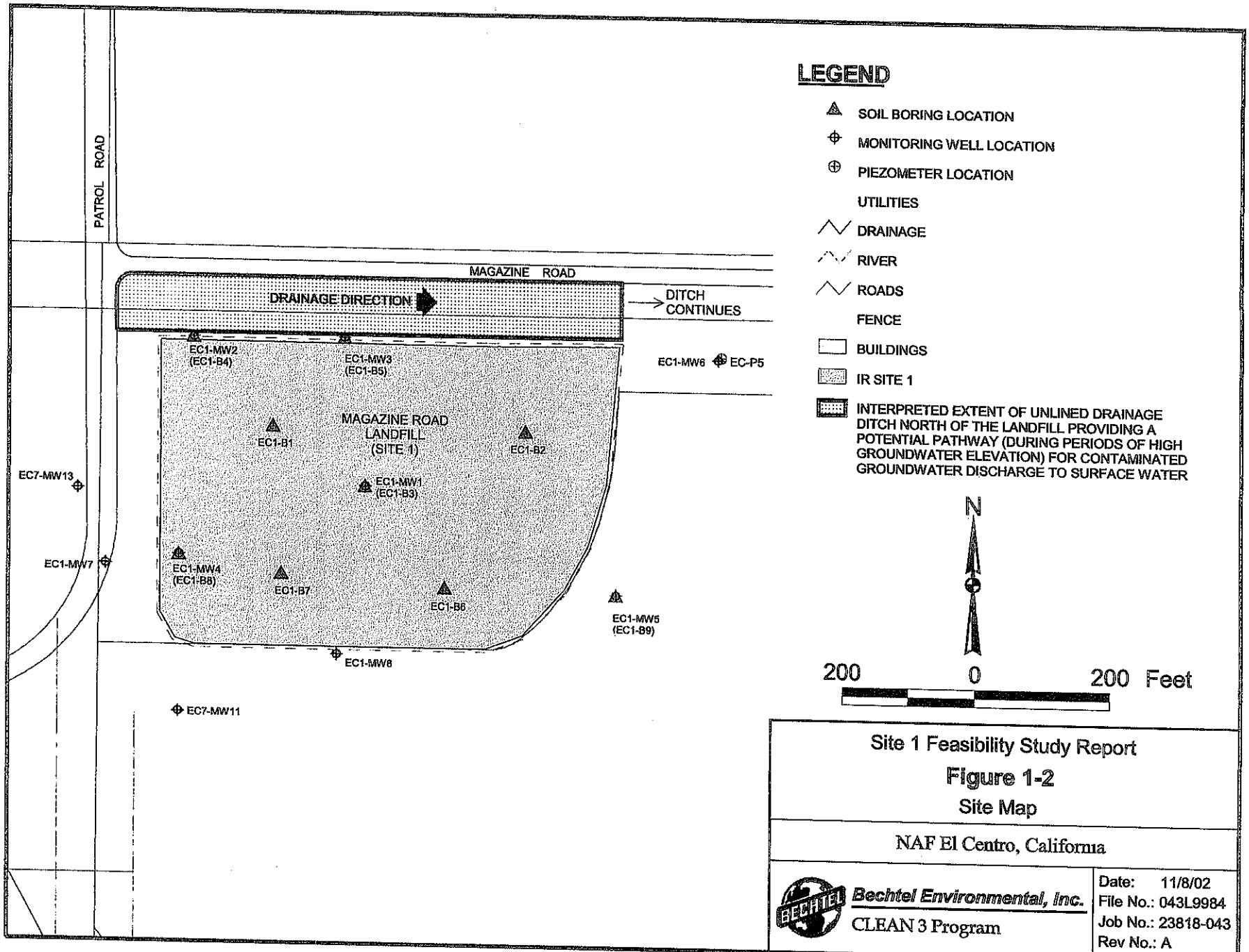
Figure 1-1

Regional and Site Location Map

NAF El Centro, California

Bechtel Environmental, Inc.
CLEAN 3 Program

Date: 11/8/02
File No: 043R9985
Job No.: 23818-043
Rev No.: A



Site 1 Feasibility Study Report

Figure 1-2

Site Map

NAF El Centro, California

Bechtel Environmental, Inc.

CLEAN 3 Program

Date: 11/8/02
File No.: 043L9984
Job No.: 23818-043
Rev No.: A

(i.e., municipal waste), with the remainder composed of construction debris and industrial wastes including plating wastes, asbestos, water-bearing fuels, used lubricating oil and hydraulic fluids, paint, solvents, photographic chemicals, sandblasting grit, pesticides, batteries, and spent cartridges. Fill materials were reportedly covered with approximately 24 inches of soil when landfill use was discontinued (Ogden 1993).

In 1998, OHM Remediation Services Corp. (OHM) conducted a non-time-critical removal action at Site 1 (OHM 1998). Activities did not include removal of landfill wastes from the site. The purpose of the removal action was to reduce the potential for human and ecological exposure to the landfill wastes and to limit potential migration of contaminants to groundwater by reducing the generation of leachate by covering the landfill with a multilayer cover system and making ancillary civil improvements. The civil improvements included:

- construction of drainage facilities to reduce ponding water, thereby minimizing water infiltration and subsequent leachate generation;
- erection of a perimeter fence to limit site access; and
- construction of an access road around the site to facilitate inspections of the cover system.

Selection of the multilayer cover system was performed in accordance with the presumptive remedy guidance for military municipal landfills (U.S. EPA 1996). This decision remains fully applicable to this FS. Therefore, to assess the potentially affected media, the landfill was evaluated based on its current status (i.e., evaluation will account for the multilayer cover system, and civil improvements).

RWQCB issued waste discharge requirements (WDRs) and an associated Monitoring and Reporting Program for Site 1 in March 1999 (RWQCB 1999b, 2002). These documents prescribe the components of the long-term monitoring program needed to comply with the California Water Code and *California Code of Regulations* (Cal. Code Regs.) tit. 27. The WDRs are the cleanup goals for groundwater at Site 1 and are included as Appendix A.

Local agricultural irrigation of a field south of Site 1 (north of Site 7 and east of Site 2) was discontinued by farmers in 1998 at the request of the DON to reduce groundwater levels beneath the landfill. This has resulted in a general decrease in water levels across Site 1 (Figure 1-3). The continued decrease in water levels at Site 1 has resulted in approximately 5 to 10 feet of separation of landfill waste from groundwater (Figure 1-3).

1.2.4 Previous Environmental Activities

Previous Site 1 activities include the following:

- preliminary assessment/site inspection (NEESA 1987)
- groundwater monitoring (Ogden 1992; BNI 1998a; 2000a,b,c; 2001a,b)

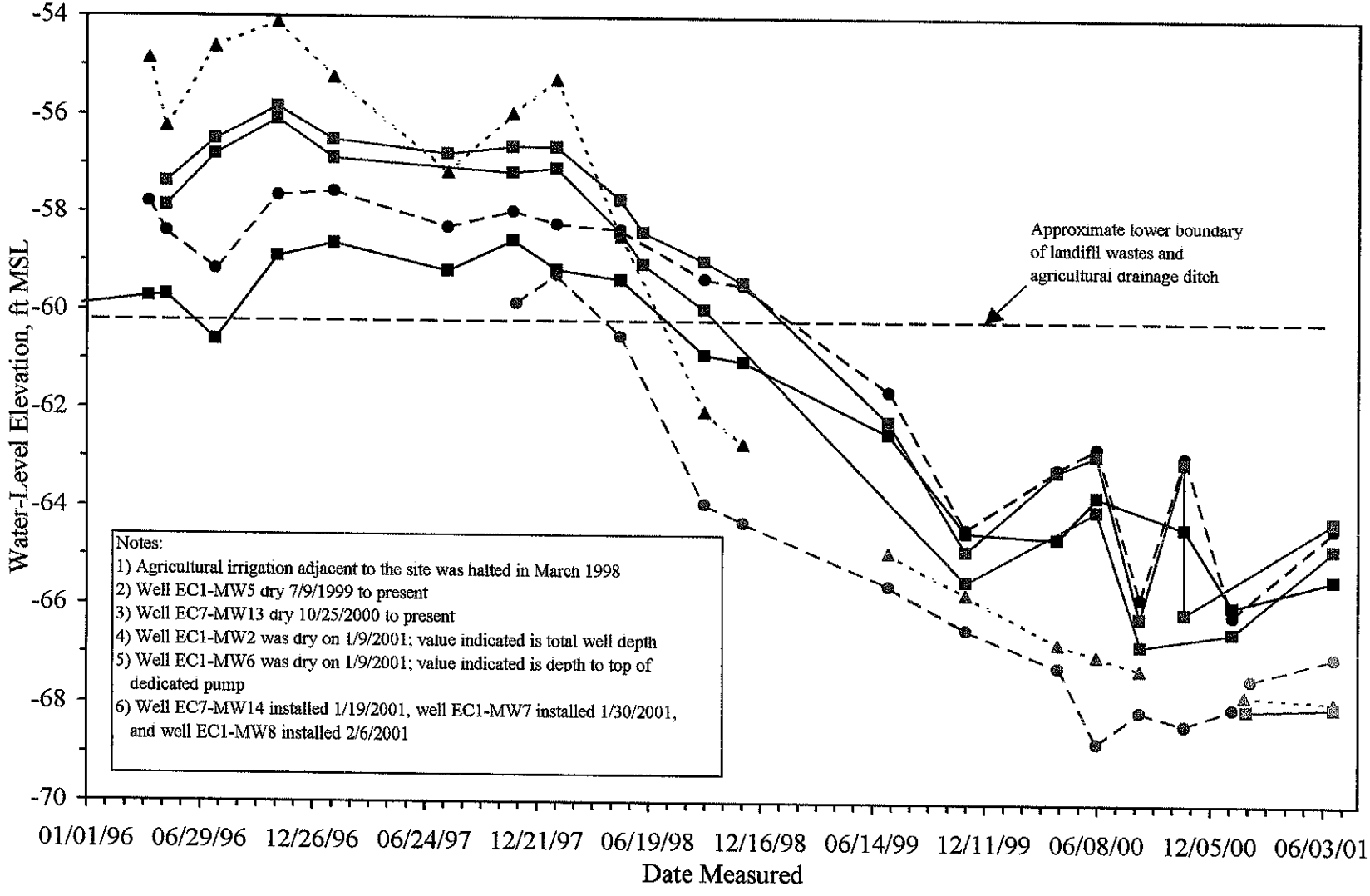


Figure 1-3
Water-Level Hydrographs, Site 1

- solid waste water quality assessment test (SWWQAT)/site investigation (SI) (Ogden 1993)
- interim remedial design (BNI 1997a)
- waste characterization (BNI 1997b)
- data gaps study (BNI 1998b)
- construction of multilayer cover system (OHM 1998, 1999, 2000a,b)

1.2.5 Nature and Extent of Contamination

The following subsections provide information on the nature and extent of contamination in soil, surface water, groundwater, and air at Site 1. Unless otherwise noted, the information is summarized from the RI Report (BNI 2002a).

1.2.5.1 SOIL

For purposes of this report, soil contamination is discussed only as it relates to potential groundwater, surface water, and air contamination. See Section 1.2.6 for a discussion on contaminant migration pathways.

In general, distribution of contaminants within the landfill is heterogeneous. Due to this heterogeneity, soil samples taken within the landfill perimeter are not considered representative of total landfill contamination. Based on historical disposal practices at Site 1 (Table 1-1), contamination is low-level with the potential for occasional hot spots.

Soil contamination outside the landfill perimeter is not considered a potential source for groundwater, surface water, or air contamination. Initially, three soil borings were advanced outside the landfill perimeter. Total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOCs), and seven of ten priority pollutant metals were reported in soil sample EC1-B9 (converted to EC1-MW5). Based on these results, four additional soil borings were advanced in a radial pattern, with EC1-B9 at the center approximately 5 feet from each new boring. No significant contamination was reported in samples from the new borings, and no landfill debris was reported in the boring logs for EC1-B9 or the new borings. Therefore, the analytical results from the original sample are considered to be erroneous. No contamination or landfill debris was reported for the other original borings.

1.2.5.2 SURFACE WATER

Surface water periodically runs through the drainage ditch north of the landfill at Site 1. The New River, approximately 1 mile west of the landfill, is not contaminated by the former landfill.

Table 1-1
Potential Contaminants Disposed at Site 1

Waste Type	Estimated Quantity[a]	Years of Disposal
Household rubbish[b]	1,000,000 cubic feet	1965–1983
Plating waste (sludges and liquid containing cadmium and arsenic from case hardening)	30,000 cubic feet	1971–1979
Asbestos	5,000 cubic feet	1965–1980
Water-bearing fuel:		
AVGAS (leaded)	8,000 gallons	1965–1983
JP-4	20,000 gallons	1965–1983
JP-5	4,000,000 gallons	1965–1983
DF-2	10,000 gallons	1965–1983
MOGAS regular (leaded)	10,000 gallons	1965–1983
MOGAS unleaded	10,000 gallons	1972–1983
Hydraulic fluid (containing chromium, lead, and zinc)	20,000 gallons	1965–1983
Paint (containing chromium, lead, and zinc)	5,000 gallons	1965–1983
Solvents:		
Carbon tetrachloride		
Tetrachloroethylene		
PD-680	8,000 gallons	1965–1983
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)		
Trichloroethylene		
Methyl ethyl ketone	5,000 gallons	1965–1983
Spent 40-millimeter cartridges	Unknown[c]	1965–1982
Photographic chemicals[d] (cyanide/silver)	Unknown	1965–1983
Sandblast grit (containing chromium, lead, and zinc)	90,000 pounds	1965–1983
Batteries	2,000	1965–1983
Pesticides (chlorinated rinse water/residual)	1,000 gallons	1965–1983
Motor oil	10,000 gallons	1965–1983

Source:
Ogden 1993

Notes:
[a] landfill wastes were burned monthly from 1965 through 1983; quantities shown are total disposed before burning; additional combustible liquids were used as necessary to aid in burning
[b] includes parachutes, film, and demolition debris
[c] undetermined number collected from Automatic Skeet Trap Range
[d] disposed as empty containers and occasionally as expired liquids

Acronyms/Abbreviations:
AVGAS – aviation gasoline
DF-2 – diesel fuel number 2
JP-4 – jet propellant grade 4
JP-5 – jet propellant grade 5
MOGAS – motor gasoline
PD-680 – petroleum distillate

1.2.5.3 GROUNDWATER

Low levels of fuel-related compounds, metals, and volatile organic compounds (VOCs) have been reported for groundwater samples collected from Site 1. However, with the exception of 1,2-dichloroethane (DCA), concentrations of these compounds are within acceptable levels, and historical trends indicate that concentrations of these compounds are decreasing. Previous investigations have concluded that the source of 1,2-DCA contamination is Site 7 (BNI 1999). 1,2-DCA contamination reported from monitoring of Site 1 wells is not included as part of this FS. The maximum reported concentration for 1,2-DCA was 21 milligrams per liter (µg/L) for a well downgradient of Site 1.

1,1,1-Trichloroethane (TCA), 1,1-dichloroethene (DCE), cis-1,2-DCE, trichloroethene (TCE), and vinyl chloride (VC) were reported at concentrations above their respective maximum contaminant levels (MCLs) in well EC1-MW8 for February 2001 sampling (Figure 1-2). However, subsequent sampling results for EC1-MW8 (June 2001 and August 2001) did not report these compounds above detection limits (BNI 2001b). Therefore, it was concluded that this was an isolated occurrence and not indicative of a release

Additional sampling of Site 1 wells, combined with other sampling rounds at EC1-MW8, resulted in reported VOC concentrations below MCLs or preliminary remediation goals (PRGs) for tap water with one exception. One concentration of carbon tetrachloride was reported at 0.51 µg/L; carbon tetrachloride has an MCL of 0.5 µg/L and a PRG of 0.17 µg/L. Reported VOCs consisted of common laboratory contaminants. The laboratory contaminants were reported infrequently.

Inorganic contaminants in Site 1 groundwater, with the exception of antimony and thallium, have historically been reported at concentrations below site background threshold values and/or MCLs. Antimony and thallium were reported at concentrations above their respective basewide background ranges and MCLs for the August 2000 sampling event. Antimony was reported at 35 µg/L, exceeding the MCL of 6 µg/L and the PRG for tap water of 15 µg/L. Thallium was reported at an estimated concentration of 3.9 µg/L, exceeding the MCL of 2 µg/L (PRG not established). Both of these metals concentrations also exceeded their respective maximum reported background ranges for the base. A discrete retest in October 2000 and subsequent sampling in February and July 2001 did not report antimony or thallium above detection limits or background concentrations. Therefore, the August 2000 sampling results are considered isolated occurrences rather than indications of a release.

1.2.5.4 AIR

In January 1997, prior to construction of the multilayer cover system, a qualitative landfill gas assessment was performed to assess whether the material disposed in the landfill was generating landfill gas, particularly methane, at concentrations that would require remedial action. The sampling procedure used to assess the landfill gas generation was suggested by the Integrated Waste Management Board and is detailed in the Site 1 RI Report (BNI 2002a). No methane was detected during the landfill gas

Section 2
REMEDIAL ACTION OBJECTIVES AND GENERAL RESPONSE ACTIONS

This section presents the RAOs, identifies the volumes/areas of contaminated media, and discusses GRAs.

2.1 REMEDIAL ACTION OBJECTIVES

RAOs are media-specific goals for protecting human health and the environment (U.S. EPA 1988). Per the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), RAOs focus the FS and define the scope of potential cleanup activities, thereby guiding the development and evaluation of cleanup alternatives (40 C.F.R. 300.430[e][2][i]).

RAOs for Site 1 were developed based on potentially affected media (Section 2.1.1), ARARs/TBC guidance (Section 2.1.2), and recommendations from the RI Report (BNI 2002a). They are as follows.

- Prevent the release of COCs (as defined in the waste discharge requirements and Monitoring and Reporting Program (RWQCB 1999b, 2002) to groundwater. It has been concluded that the presence of metals at concentrations within historical background ranges for groundwater at NAF El Centro (Table 2-1) and VOCs that are associated with the Site 7 petroleum plume (aromatic hydrocarbons and 1,2-DCA) do not indicate a release from Site 1 (BNI 2000b).
- Prevent discharge of contaminated groundwater to surface water through the drainage ditch north of the landfill.
- Maintain the integrity of the landfill cap and monitoring systems.
- Monitor groundwater to detect potential releases.

2.1.1 Potentially Affected Media and Chemicals of Concern

Potentially affected media include groundwater and surface water (BNI 2002a). COCs for Site 1 are specified in the Monitoring and Reporting Program (RWQCB 1999b) as follows:

- VOCs
- dissolved metals
- anions
- pH
- total dissolved solids
- SVOCs
- pesticides
- herbicides

Table 2-1
Historical Background Ranges of Metals in Groundwater[a] and Highest Reported Results From June 2001 Sampling Round[b]
(results reported in micrograms per liter)

Analyte	Background Range	June 2001 Sampling Results
Antimony	0 5–10 6	6 U
Arsenic	1 4–11	7 5
Beryllium	1 1–3 2	5 U
Cadmium	0 9–8	10 U
Chromium	4 4–8 9	4 1
Copper	4 0–59 7	4 2
Lead	0 4–8 5	30 U
Nickel	4 4–8 4	6 7
Selenium	1 0–328	91 1 J
Silver	0 6–13 6	10 U
Thallium	0 2–1 0	10 U
Zinc	6 7–93	12 1

Source:
BNI 1998a

Notes:
[a] background evaluation will continue under the Long-Term Installation Restoration Site Groundwater Monitoring Program at Naval Air Facility El Centro
[b] the following wells were sampled during the June 2001 quarterly sampling round at Site 1: EC1-MW8, EC1-MW7, EC7-MW14, and EC-P5; results shown in this table are the highest results of these four wells as reported by the laboratory

Data Qualifiers:
J – estimated quantity
U – not detected; result shown is laboratory reporting limit

- polychlorinated biphenyls
- cyanide
- sulfide
- carbonate

2.1.2 Applicable or Relevant and Appropriate Requirements and Guidance and Regulations to Be Considered

Section 121(d) of CERCLA states that, upon completion, remedial actions at CERCLA sites must meet any federal (or state if more stringent) environmental standards, requirements, criteria, or limitations determined to be ARARs.

Where ARARs do not exist, agency advisories, criteria, or guidance are to be considered useful in determining what is protective at a site or how to carry out certain actions or requirements, per the NCP (55 *Federal Register* 8745). However, the NCP preamble states that provisions in the TBC category "should not be required as cleanup standards because they are, by definition, generally, neither promulgated nor enforceable, so they do not have the same status under CERCLA as ARARs."

As the lead federal agency, the DON has primary responsibility for identifying federal ARARs at NAF El Centro. The DON requested that the California Environmental Protection Agency, Department of Toxic Substances Control identify potential state ARARs for NAF El Centro. (Solicitation of state ARARs is detailed in Appendix B.)

Requirements of ARARs and TBCs are categorized as follows.

- *Chemical-specific ARARs*. Health- or risk-based numerical values for various environmental media specified in state or federal statutes or regulations. These numerical values establish the acceptable amount or concentration of a chemical that may be present in a specific medium at a site or that may be discharged to the site or the ambient environment during remedial activities.
- *Location-specific ARARs*. Regulations that address the areas where remedial action takes place. Identified regulations that are potential ARARs may require actions to preserve or protect aspects of environmental or cultural resources that may be threatened by remedial actions at the site.
- *Action-specific ARARs*. Regulations that apply to specific activities or technologies used to remediate a site. They can include design criteria and performance requirements.

Appendix B includes a comprehensive explanation of the ARARs selection process and detailed analysis of ARARs considered for this FS.

2.2 GENERAL RESPONSE ACTIONS

GRAs are categories of actions that could satisfy the RAOs. GRAs are media-specific and may include treatment, containment, collection, disposal, institutional actions, or a combination of these (U.S. EPA 1988). In addition, the NCP requires that no action be considered.

GRAs are developed based on volumes or areas of contaminated media to which the general response action might be applied (U.S. EPA 1988). Per the discussion of the presumptive remedy for military landfills (Section 1.2.8), the only portions of the presumptive remedy applicable to this FS were source area groundwater control to contain contaminants and institutional controls to supplement engineered controls. Source area groundwater control to contain contaminants would apply to the volume of groundwater contained in the shallow water-bearing unit underlying the landfill. This volume was estimated as the area of the landfill multiplied by the estimated thickness of the water-bearing unit (Table 2-2)

GRAs identified for groundwater are:

- no action,
- monitoring,
- institutional controls,
- collection for subsequent disposal or treatment and discharge,
- containment, and
- *in situ* treatment of contaminated groundwater at the downgradient edge of contamination.

GRAs identified for surface water are:

- no action,
- institutional actions,
- collection of surface water for subsequent disposal or treatment and discharge,
- containment, and
- *in situ* treatment.

2.3 IDENTIFICATION AND SCREENING OF TECHNOLOGY TYPES AND PROCESS OPTIONS

This section identifies and screens media-specific technology types and process options for each GRA category listed in Section 2.2 (Tables 2-3 and 2-4). Process options for each technology type were preliminarily screened based on technical implementability. Technical implementability is used as a preliminary screening criterion to eliminate process options that are clearly ineffective or unworkable at a site (U.S. EPA 1988). Due to the limited number of process options retained from the screening process, evaluation of process options on the basis of effectiveness and cost were not evaluated at this stage.

Table 2-2
Volume[a] of Contaminated Groundwater in the Shallow Water-Bearing Unit Underlying the Landfill

JUNE 2001 WATER-LEVEL DATA		
Station ID	Elevation of Groundwater (feet below MSL)	Thickness of Shallow Groundwater* (feet)
EC1-MW2	65.43	12.57
EC1-MW3	64.39	13.61
EC1-MW5	Dry	NA
EC1-MW6	64.24	13.76
EC1-MW7	68.02	9.98
EC1-MW8	67.00	11
EC7-MW11	Dry	NA
EC7-MW13	Dry	10.1
EC7-MW14	67.90	NA
EC-P5	64.81	13.19

Note:
* 78 feet below MSL is approximate average depth of the first continuous lower permeability stratigraphic layer beneath Site 1 (an interbedded clay and clayey sand); this number was subtracted from the corresponding groundwater elevation to determine the thickness of the shallow groundwater

Acronyms/Abbreviations:
MSL – mean sea level
NA – not applicable

Calculation:
V = volume = T_1 x A x p = 12.03 feet x 240,000 square feet x 0.25 = 72,180 cubic feet
where
T_1 = average water thickness = 12.03 feet
A = landfill area = 600 feet x 400 feet = 240,000 square feet
p = porosity = 0.25 (dimensionless)

Instead, all of the process options retained after screening were used to develop the remedial alternatives.

2.3.1 Groundwater

GRAs, technology types, process options, and screening comments for groundwater are presented in Table 2-3.

2.3.2 Surface Water

GRAs, technology types, process options, and screening comments for surface water are presented in Table 2-4.

Table 2-3
Screening of Technology Types and Process Options for Groundwater

GRA	Technology Type	Process Options	Description	Screening Comments
No Action	None	Not applicable	No action	Required by the NCP
Institutional actions	Land-use restrictions	Restrictions on irrigation	Restricts irrigation of fields near landfill to prevent increase in water table elevation. This restriction could be used to maintain separation between groundwater and landfill wastes	Potentially applicable
		Restrictions to protect the remedy	• Cap and monitoring systems To ensure the integrity of the cap, drainage system, and monitoring systems, future owner(s) or land user(s) will be restricted from activities that will adversely impact the cap, monitoring, and collection systems or affect the drainage, subdrainage, and erosion controls developed for the cap (including soils, cobbles, gravel, paving, etc.) The following activities are prohibited: – excavation below the surface grade of the cap other than routine maintenance and/or repair of the landfill cap and environmental monitoring systems – excavation affecting the drainage, subdrainage, or erosion controls developed for the cap – excavation, removal, or other action that would disturb the groundwater monitoring system • Construction Future owner(s) or land user(s) will be restricted from construction that would interfere with and negatively impact the remedy or restrict site access for operation and maintenance of the remedy • Fencing and signs Future owner(s) or land user(s) will be restricted from disturbing or removing fencing or signs that notify the public of the landfill. A written request or approval must be obtained from the Navy before removal or relocation of fencing and signs. • Equipment Monitoring of the landfill will include groundwater and leachate monitoring using groundwater wells and other equipment. Future owner(s) and/or land user(s) will be restricted from disturbing equipment associated with monitoring and maintenance of the site without prior approval from the Navy and the regulators.	Potentially applicable
Monitoring	Monitoring	Groundwater monitoring	Ongoing monitoring of wells.	Potentially applicable
Collection for subsequent disposal or treatment and discharge	Extraction	Extraction wells	Site groundwater extracted to maintain low water level, thereby preventing contact between groundwater and landfill wastes and preventing discharge of groundwater to the unlined drainage ditch.	Establishing a gradient toward Site 1 by extracting groundwater may increase rate and distance of migration of Site 7 groundwater plume (1,2-DCA, BTEX, and total petroleum hydrocarbons measured as gasoline).
	Subsurface drains	Interceptor trenches	Perforated pipe in trenches backfilled with porous media to collect contaminated groundwater.	See comments on extraction wells.
Containment	Barrier between landfill and groundwater	Liner	Excavate landfill wastes, then install a liner and replace landfill wastes. This would provide a barrier between landfill wastes and groundwater.	Not acceptable. This would require destruction of the preexisting landfill cap, on-site storage of more than 100 tons of contaminated material, and construction of a new landfill cap.
In situ treatment of contaminated groundwater at plume edge	Biological	Aerobic	Degradation of organics using microorganisms in an aerobic environment.	Not applicable to inorganic contaminants found in groundwater at the site.
		Anaerobic	Degradation of organics using microorganisms in an anaerobic environment.	Not applicable to inorganic contaminants found in groundwater at the site.
	Chemical	Chemical oxidation	Degradation of organics by injecting oxidizing chemicals into the groundwater.	Not applicable to inorganic contaminants found in groundwater at the site.

Acronyms/Abbreviations:
BTEX – benzene, toluene, ethylbenzene, and xylenes
DCA – dichloroethane
GRA – general response action
NAF – Naval Air Facility
NCP – National Oil and Hazardous Substances Pollution Contingency Plan

Table 2-4
Screening of Technology Types and Process Options for Surface Water

GRA	Technology Type	Process Options	Description	Screening Comments
No action	None	Not applicable	No action	Required by the NCP
Institutional actions	Land-use restrictions	Restrictions on irrigation	Restricts irrigation of fields near landfill to prevent increase in water table elevation. This restriction could be used to maintain separation between groundwater and landfill wastes	Potentially applicable
		Restrictions to protect the remedy	• Cap and monitoring systems To ensure the integrity of the cap, drainage system, and monitoring systems, future owner(s) or land user(s) will be restricted from activities that will adversely impact the cap, monitoring, and collection systems or affect the drainage, subdrainage, and erosion controls developed for the cap (including soils, cobbles, gravel, paving, etc) The following activities are prohibited. – excavation below the surface grade of the cap other than routine maintenance and/or repair of the landfill cap and environmental monitoring systems – excavation affecting the drainage, subdrainage, or erosion controls developed for the cap – excavation, removal, or other action that would disturb the groundwater monitoring system • Construction Future owner(s) or land user(s) will be restricted from construction that would interfere with and negatively impact the remedy or restrict site access for operation and maintenance of the remedy • Fencing and signs Future owner(s) or land user(s) will be restricted from disturbing or removing fencing or signs that notify the public of the landfill. A written request or approval must be obtained from the Navy before removal or relocation of fencing and signs. • Equipment Monitoring of the landfill will include groundwater and leachate monitoring using groundwater wells and other equipment. Future owner(s) and/or land user(s) will be restricted from disturbing equipment associated with monitoring and maintenance of the site without prior approval from the Navy and the regulators.	Potentially applicable
Collection of surface water for subsequent disposal or treatment and discharge	Subsurface drains	Drains in trench	Install subsurface drains in ditch for collection of all water flowing through ditch.	Ditch is an agricultural drain with year-round water flow from irrigation. Discharge of groundwater to the ditch has been very sporadic and very low in volume. Collection of water from the ditch would be a long-term process that could interfere with nearby irrigation practices. Therefore, this option is considered infeasible.
Containment	Extraction	Extraction wells	Use extraction wells between landfill edge and unlined drainage ditch to maintain low local water levels, thereby preventing discharge of groundwater to the ditch	Establishing a gradient toward Site 1 by extracting groundwater may increase rate and distance of migration of Site 7 groundwater plume (1,2-DCA, BTEX, and total petroleum hydrocarbons measured as gasoline)
	Interceptor trenches	Subsurface drain	Perforated pipe in trenches backfilled with porous media to collect contaminated groundwater to maintain low local water levels, thereby preventing discharge of groundwater to the ditch	See comments on extraction wells
	Civil improvements	Ditch lining	Ditch would be lined to eliminate pathway from groundwater to surface water.	Potentially applicable
In situ treatment of surface water	Biological	Aerobic	Degradation of organics using microorganisms in an aerobic environment	Surface water is not currently contaminated. Not applicable to inorganic contaminants found in groundwater at the site.
		Anaerobic	Degradation of organics using microorganisms in an anaerobic environment.	Surface water is not currently contaminated. Not applicable to inorganic contaminants found in groundwater at the site.
	Chemical	Chemical oxidation	Degradation of organics by injecting oxidizing chemicals into the groundwater	Not applicable to inorganic contaminants found in groundwater at the site.

Acronyms/Abbreviations:
BTEX – benzene, toluene, ethylbenzene, and xylenes
DCA – dichloroethane
GRA – general response action
NCP – National Oil and Hazardous Substances Pollution Contingency Plan

Section 3
DEVELOPMENT AND SCREENING OF ALTERNATIVES

This section discusses the development and screening of remedial alternatives.

3.1 DEVELOPMENT OF REMEDIAL ALTERNATIVES

Media-specific process options were preliminarily screened based on technical implementability (Section 2.3). Groundwater process options retained are the following:

- no action
- restrictions on field irrigation near the site
- restrictions to protect the remedy
- continued groundwater monitoring

Surface water process options retained are the following:

- no action
- restrictions on field irrigation near the site
- restrictions to protect the remedy
- lining the adjacent ditch

Groundwater monitoring is required in order to comply with RWQCB site WDRs. Therefore, groundwater monitoring will be included in all of the developed remedial alternatives except the no action alternative. Restrictions on field irrigation near the site and restrictions to protect the remedy are potentially applicable for all media of concern and will be included in Alternatives 3 and 4, described below. The following remedial alternatives will be evaluated for Site 1:

- Alternative 1 – no action
- Alternative 2 – continued groundwater monitoring
- Alternative 3 – continued groundwater monitoring, restrictions on irrigation near the site, and restrictions to protect the remedy
- Alternative 4 – continued groundwater monitoring, lining the adjacent ditch, restrictions on irrigation near the site, and restrictions to protect the remedy

3.2 SCREENING OF REMEDIAL ALTERNATIVES

The remedial alternatives developed in Section 3.1 were screened based on effectiveness, implementability, and cost (Table 3-1).

The effectiveness of a remedial alternative was based on the following:

- potential effectiveness of the remedial alternative for meeting the RAOs
- potential impact to human health and the environment during the construction and implementation phase

Table 3-1
Results of Remedial Alternatives Screening

Remedial Alternative	Effectiveness	Implementability	Cost	Result
Alternative 1 – no action	Does not achieve RAOs. Does not eliminate potential for contact between landfill wastes and groundwater or migration of contaminated groundwater to the drainage ditch.	Readily implementable. Requires no action.	None.	Not applicable; however, must be retained per the NCP.
Alternative 2 – continued groundwater monitoring	Does not eliminate potential for contact between landfill wastes and groundwater or migration of contaminated groundwater to the drainage ditch. Current monitoring has been effective in assuring the integrity of the landfill cap and monitoring system.	Readily implementable. Groundwater monitoring is already in place.	No additional cost.	Applicable
Alternative 3 – continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect the remedy	Historical trends (BNI 2001a) indicate that continuation of preexisting restrictions on field irrigation would be effective in maintaining low site groundwater levels, thereby preventing contact between groundwater and landfill wastes and discharge of groundwater to the unlined drainage ditch. Current monitoring and maintenance efforts have been effective in maintaining the integrity of the landfill cap and monitoring system.	Readily implementable. Groundwater monitoring is already in place and restrictions have been in place since 1998. The only new actions required would be assuring that restrictions on field irrigation remain in place and putting restrictions in place for maintaining the integrity of the landfill cap and monitoring system.	Very low. The only new costs would be those associated with preparation of documents assuring that restrictions on field irrigation remain in place and putting restrictions in place for maintaining the integrity of the landfill cap and monitoring system.	Applicable

(table continues)

Table 3-1 (continued)

Remedial Alternative	Effectiveness	Implementability	Cost	Result
Alternative 4 – continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect the remedy	Historical trends (BNI 2001a) indicate that continuation of preexisting restrictions on field irrigation would be effective in maintaining low site groundwater levels, thereby preventing contact between groundwater and landfill wastes and discharge of groundwater to the unlined drainage ditch. Lining the ditch would provide secondary protection against discharge of groundwater to surface water in the event that unforeseen increases in groundwater levels occur.	Readily implementable. Groundwater monitoring is already in place and restrictions have been in place since 1998. New actions required would be ensuring that restrictions on field irrigation remain in place, putting restrictions in place for maintaining the integrity of the landfill cap and monitoring system, and lining the ditch. Technologies for lining the ditch are readily available and could be easily implemented at the site.	Moderate capital and maintenance costs would be incurred for ditch lining. Very low costs associated with preparation of documents assuring that restrictions on field irrigation remains in place and putting restrictions in place for maintaining the integrity of the landfill cap and monitoring system would also be incurred.	Applicable

Acronyms/Abbreviations:
NCP – National Oil and Hazardous Substances Pollution Contingency Plan
RAO – remedial action objective

- how proven and reliable the remedial alternative is given the contaminants and conditions at the site

The implementability of a remedial alternative was considered to include both the technical and administrative feasibility of implementation. Administrative aspects include obtaining necessary permits for off-site activities; and availability of treatment, storage, and disposal services; and availability of necessary equipment and skilled workers to implement the technology.

The cost of a remedial alternative was based on a qualitative cost analysis. Remedial alternatives with lower costs were preferred if effectiveness and implementability were judged to be similar.

Effectiveness was given the most weight, followed by implementability, and then cost. As a result of the screening, each remedial alternative was designated as either "applicable," "potentially applicable," or "not applicable."

- *Applicable* remedial alternatives are those judged most appropriate for implementation at Site 1.
- *Potentially applicable* remedial alternatives could be implemented at Site 1, but are judged as less effective, less implementable, or more costly than applicable remedial alternatives. Potentially applicable remedial alternatives could be used to substitute for or to support the selected remedial alternative.
- *Not applicable* remedial alternatives were eliminated from further consideration.

Based on the screening results presented in Table 3-1, Alternative 1, no action, was designated not applicable. However, per the NCP, this alternative will be retained for further detailed analysis. Alternatives 2, 3 and 4 were all designated as applicable and will be retained for detailed analysis (Section 4).

Section 4
DETAILED ANALYSIS OF ALTERNATIVES

This section presents the detailed analysis of alternatives.

4.1 ANALYSIS CRITERIA

Detailed analysis of remedial alternatives was based on the following criteria:

- overall protection of human health and the environment
- compliance with ARARs
- long-term effectiveness and permanence
- reduction of toxicity, mobility, or volume through treatment
- short-term effectiveness
- implementability
- cost
- state acceptance
- community acceptance

Each criterion is described below.

4.1.1 Overall Protection of Human Health and the Environment

This criterion addresses whether an alternative would provide adequate protection of human health and the environment. The evaluation focused on how site risks would be eliminated, reduced, or controlled through treatment, engineering, or institutional controls. This overall assessment incorporated the evaluations for other criteria, especially long-term effectiveness, short-term effectiveness, and compliance with ARARs.

4.1.2 Compliance With ARARs

This criterion addresses whether an alternative complies with ARARs under federal environmental laws and state environmental or facility siting laws.

4.1.3 Long-Term Effectiveness and Permanence

This criterion addresses the long-term effectiveness of each alternative, the permanence of the alternative, and the degree of certainty that it would succeed. Factors considered include the following:

- the magnitude and characteristics of the untreated waste or treatment residuals at the conclusion of the remedial activities, to the degree that they remain hazardous considering their volume, toxicity, mobility, and propensity to bioaccumulate
- adequacy and reliability of controls, such as containment systems, needed to manage treatment residuals and untreated waste, including the potential need to

replace technical components of the alternative (e.g., cap, slurry wall, or treatment system) and the potential exposure pathways and risks posed should the remedial action need replacement

4.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

This criterion addresses the degree to which an alternative would employ recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the site. Factors considered include the following:

- the treatment or recycling processes that the alternative would employ and the materials it would treat
- the amount of hazardous substances, pollutants, or contaminants that would be destroyed, treated, or recycled, including how the principal threat(s) would be addressed
- the degree of expected reduction in toxicity, mobility, or volume of the waste due to treatment and/or recycling, and the specification of which reduction(s) are occurring (toxicity, mobility, and/or volume)
- the degree to which the treatment would be irreversible
- the type and quantity of residuals that would remain following treatment, considering the persistence, toxicity, mobility, and propensity to bioaccumulate the hazardous substances and their constituents
- whether the alternative would satisfy the statutory preference for treatment as a principal element

4.1.5 Short-Term Effectiveness

This criterion addresses short-term risks to the community during implementation of an alternative, including the following:

- potential impacts to community from hazards created during implementation of the remedial action
- potential impacts on workers during remedial action and the effectiveness and reliability of protective measures
- potential environmental impacts of the remedial action and the effectiveness and reliability of mitigation measures during implementation
- the time until the remediation goals would be achieved

4.1.6 Implementability

This criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. The following factors were evaluated:

- technical feasibility
  - construction and operation—technical difficulties and unknowns associated with the construction and operation of a technology
  - reliability of the technology—focuses on the likelihood that technical problems associated with implementation will lead to schedule delays
  - the ease of undertaking additional remedial actions
  - the ability to monitor the effectiveness of the remedy
- availability of services and materials
  - the availability of adequate off-site treatment, storage capacity, and disposal capacity and services
  - availability of necessary additional resources
  - availability of services and materials
  - availability of prospective technologies
- administrative feasibility
  - activities needed to coordinate with other offices and agencies
  - the ability and time required to obtain any necessary approvals and permits from those agencies

4.1.7 Cost

Cost estimates for the alternatives were developed as order-of-magnitude costs intended for comparative purposes only. These cost estimates should not be used for budget or funding purposes. (Cost estimates for an FS usually include capital costs, annual operation and maintenance costs, and net present value of capital and operation and maintenance costs. However, these components were not developed due to the disparity among total costs for the alternatives.)

4.1.8 State Acceptance

This criterion was used to assess the technical and administrative issues and concerns the state may have regarding each alternative.

4.1.9 Community Acceptance

This criterion addresses general community support, reservations, or opposition to the alternatives and will be included in the record of decision. This assessment will not be completed until public comments on the proposed plan have been received.

4.2 INDIVIDUAL ANALYSIS OF ALTERNATIVES

Due to the limited number and technical simplicity of the remedial alternatives, this FS does not include a narrative discussion and tabular summary of the assessment of each alternative. Instead, the individual analyses are included, in their entirety, as Table 4-1.

4.3 COMPARATIVE ANALYSIS OF ALTERNATIVES

The relative performance of the remedial alternatives was compared based on the evaluation criteria (Section 4.1). The comparative analysis distinguished the advantages and disadvantages of each alternative and identified key trade-offs to consider when selecting the final remedy. When selecting a final remedy under CERCLA, the criteria are evaluated according to the following hierarchy per the NCP (40 C.F.R. 300.430[f]):

- threshold criteria
  - overall protection of human health and the environment
  - compliance with ARARs
- primary balancing criteria
  - long-term effectiveness and permanence
  - reduction of toxicity, mobility, or volume through treatment
  - short-term effectiveness
  - implementability
  - cost
- modifying criteria
  - state acceptance
  - community acceptance

CERCLA, Section 121 (d), and the NCP, 40 C.F.R. 300.430(f)(1)(ii), require that a cleanup remedy protect human health and the environment and comply with ARARs, unless justification to waive a specific ARAR is provided in the record of decision. Therefore, both threshold criteria must be satisfied for a remedial alternative to be eligible for selection, unless an ARARs waiver applies. Trade-offs between eligible alternatives are generally among the five primary balancing criteria. Modifying criteria will be addressed once state and public review and comment are completed.

Alternative 4 rated highest overall among the five balancing criteria, followed by Alternative 3, Alternative 2 and finally Alternative 1. Both Alternatives 3 and 4 would meet the threshold criteria of protection of human health and the environment and compliance with ARARs. Alternatives 1 and 2 would not meet the threshold criteria of overall protection of human health and the environment. The following subsections detail the comparative analysis for groundwater alternatives according to criterion.

4.3.1 Overall Protection of Human Health and the Environment

Alternatives 1 and 2 would not be protective of human health and the environment. Alternatives 3 and 4 would meet the threshold criterion of protection of human health and the environment.

Table 4-1
Individual Analysis of Remedial Alternatives

Key Alternative Components/ Analysis Criteria	Alternative 1 No Action	Alternative 2 Continued Groundwater Monitoring	Alternative 3 Continued Groundwater Monitoring, Restrictions on Field Irrigation and Restrictions to Protect the Remedy	Alternative 4 Continued Groundwater Monitoring, Restrictions on Field Irrigation, Restrictions to Protect the Remedy and Ditch Lining
Alternative description	The no action alternative provides a baseline against which other alternatives are compared. This alternative would involve no treatment, engineered measures, or institutional actions. If implemented, this action would be a final remedy for Site 1. This alternative would not require maintaining the current restrictions on field irrigation.	This alternative would involve no treatment, engineered measures, or institutional actions. If implemented, this action would be a final remedy for Site 1. This alternative would not require maintaining the current restrictions on field irrigation. Waste discharge requirements and an associated monitoring and reporting plan are already in place for this site. Under this alternative they would remain in place, thereby maintaining a mechanism for identifying future contaminant releases to groundwater.	This alternative would put controls in place to restrict future irrigation of the field adjacent to the site and specify restrictions to protect the integrity of the landfill cap and monitoring program. This action would maintain water levels below the level of landfill wastes and below the level of the unlined drainage ditch, thereby eliminating potential migration pathways for contaminants. Waste discharge requirements and an associated monitoring and reporting plan are already in place for this site. Under this alternative they would remain in place, thereby maintaining a mechanism for identifying future contaminant releases to groundwater.	This alternative would put controls in place to restrict future irrigation of the field adjacent to the site and specify restrictions to protect the integrity of the landfill cap and monitoring program. This would maintain water levels below the level of landfill wastes and below the level of the unlined drainage ditch thereby eliminating the potential migration pathways for contaminants. In addition this alternative provides a mechanism (ditch lining) to further protect against groundwater discharges to surface water in the event of unforeseen increases in groundwater levels Waste discharge requirements and an associated monitoring and reporting plan are already in place for this site. Under this alternative they would remain in place, thereby maintaining a mechanism for identifying future contaminant releases to groundwater.
Remedial response objective	Take no action	Monitor groundwater to detect potential releases.	Prevent completion of contaminant migration pathways.	Prevent completion of contaminant migration pathways.
Remedial response timeline	No response required.	At least 28 years, based on statutory requirement of 30 years of postclosure landfill monitoring (landfill has been closed for 2 years).	At least 28 years, based on statutory requirement of 30 years of postclosure landfill monitoring (landfill has been closed for 2 years)	At least 28 years, based on statutory requirement of 30 years of postclosure landfill monitoring (landfill has been closed for 2 years).
Overall protection of human health and the environment	Would not substantially alter current or potential future risks to human health and the environment. Contaminant migration pathways are not currently complete. However, because this alternative does not require future restrictions on irrigation, contaminant migration pathways could be completed in the future.	Would not substantially alter current or potential future risks to human health and the environment. Contaminant migration pathways are not currently complete. However, because this alternative does not require future restrictions on irrigation, contaminant migration pathways could be completed in the future.	This alternative should decrease the current and potential future risks to human health and the environment by keeping contaminant migration pathways from being completed.	This alternative should decrease the current and potential future risks to human health and the environment by keeping contaminant migration pathways from being completed.
Compliance with ARARs	The no action alternative does not trigger ARARs.	Would not comply with ARARs.	Would meet the threshold criteria for compliance with ARARs.	Would meet the threshold criteria for compliance with ARARs.
Long-term effectiveness and permanence	This alternative would not prevent contaminant migration pathways from being completed. Therefore, this alternative would not be effective in the long-term.	This alternative would not prevent contaminant migration pathways from being completed. Therefore, this alternative would not be effective in the long-term	This alternative should be effective for the long term in protecting human health and the environment by keeping contaminant migration pathways from being completed.	This alternative should be effective for the long term in protecting human health and the environment by keeping contaminant migration pathways from being completed.
Reduction of toxicity, mobility, or volume through treatment	This alternative would not reduce toxicity, mobility, or volume of contamination through treatment.	This alternative would not reduce toxicity, mobility, or volume of contamination through treatment.	This alternative would not use treatment to reduce toxicity, mobility, or volume of contamination. However, mobility would be reduced by preventing contact between groundwater and landfill wastes.	This alternative would not use treatment to reduce toxicity, mobility, or volume of contamination. However, mobility would be reduced by preventing contact between groundwater and landfill wastes.

(table continues)

Table 4-1 (continued)

Key Alternative Components/ Analysis Criteria	Alternative 1 No Action	Alternative 2 Continued Groundwater Monitoring	Alternative 3 Continued Groundwater Monitoring, Restrictions on Field Irrigation and Restrictions to Protect the Remedy	Alternative 4 Continued Groundwater Monitoring, Restrictions on Field Irrigation, Restrictions to Protect the Remedy and Ditch Lining
Short-term effectiveness	This alternative would not entail any remedial activities that would impact the community, workers, or the environment during implementation. However, this alternative does not include a mechanism for assuring that contaminant migration pathways would not exist and is therefore not protective of human health and the environment	Risks to workers would be limited to those normally associated with groundwater monitoring activities. These risks would be mitigated through the development and implementation of a project-specific safety and health plan. However, this alternative does not include a mechanism for assuring that contamination migration pathways would not exist and is therefore not protective of human health and the environment	Risks to workers would be limited to those normally associated with groundwater monitoring activities. These risks would be mitigated through the development and implementation of a project-specific safety and health plan. This alternative includes institutional controls that would prohibit irrigation of nearby agricultural fields and thereby maintain separation between the water table and landfill wastes and the incomplete migration pathway for COCs to groundwater.	Risks to workers would be limited to those normally associated with construction and groundwater monitoring activities. These risks would be mitigated through the development and implementation of a project-specific safety and health plan. This alternative includes institutional controls that would prohibit irrigation of the nearby agricultural fields and thereby maintain separation between the water table and landfill wastes and the incomplete migration pathway for COCs to groundwater. The lining of the drainage ditch would also effectively eliminate the potential pathway for contaminated groundwater to contact surface water.
Implementability	This alternative could be readily implemented because it would not involve remediation activities.	The technologies needed for this alternative would be readily available, easily implemented, and reliable. This alternative would require reduction of activities currently in place at the site (i.e., would eliminate irrigation restrictions for adjacent field).	The technologies needed for this alternative would be readily available, easily implemented, and reliable.	The technologies needed for this alternative would be readily available, easily implemented, and reliable
Cost	There would be a reduction in costs with this alternative	There would be no new costs associated with this alternative.	Because the monitoring and reporting program and restrictions on field irrigation are already in place, the only new costs would be for putting restrictions in place for maintaining the integrity of the landfill cap and monitoring system.	Because the monitoring and reporting program and restrictions on field irrigation are already in place, the only new costs for this alternative would be those associated with ditch lining (approximately $100,000) and for putting restrictions in place for maintaining the integrity of the landfill cap and monitoring system.
State acceptance	DTSC and RWQCB comments are included in Appendix A. The comments do not address this alternative, however it does not meet RAOs. DTSC and RWQCB specified a preference for Alternative 4.	DTSC and RWQCB comments are included in Appendix A. The comments do not address this alternative. However, DTSC and RWQCB specified a preference for Alternative 4.	DTSC and RWQCB comments (Appendix A) did not include specific technical and administrative issues and concerns regarding this alternative. However, DTSC and RWQCB specified a preference for Alternative 4.	DTSC and RWQCB comments (Appendix A) did not include specific technical and administrative issues and concerns regarding this alternative. However, DTSC and RWQCB specified a preference for Alternative 4
Community acceptance	Comments will be solicited from community members during the public review period for the PP.	Comments will be solicited from community members during the public review period for the PP.	Comments will be solicited from community members during the public review period for the PP.	Comments will be solicited from community members during the public review period for the PP.

Acronyms/Abbreviations:
ARAR – applicable or relevant and appropriate requirement
DTSC – (California Environmental Protection Agency) Department of Toxic Substances Control
RAO – Remedial Action Objective
RWQCB – (California) Regional Water Quality Control Board
PP – proposed plan

4.3.2 Compliance with ARARs

ARARs are not applicable to Alternative 1 because ARARs apply to "any removal or remedial action conducted entirely on-site" and "no action" is not a removal or remedial action (CERCLA Section 121 (e), 42 *United States Code* [U.S.C.] § 9621 [e]). Alternative 2 would not comply with ARARs. Alternative 2 would not comply with ARARs because it does not include continuation of irrigation restrictions or other measures to maintain groundwater levels below the base of the landfill waste. A potential rise in groundwater levels could allow groundwater to contact landfill wastes, which may leach contaminants from the waste and cause water quality to exceed the WDRs, therefore not achieving RAOs. Alternatives 3 and 4 would meet the threshold criterion of compliance with ARARs.

4.3.3 Long-Term Effectiveness and Permanence

Alternatives 3 and 4 are rated "moderate" and "high" for long-term effectiveness and permanence, respectively. Current trends indicate decreasing COC concentrations in groundwater, and current groundwater COC concentrations are already below remediation goals. Current restrictions on field irrigation near the site (a process option in Alternatives 3 and 4) have proven successful in maintaining water levels below the elevation of landfill waste. Alternatives 3 and 4 also contain the process option "restrictions to protect the remedy," which protects against damage to the landfill cap (from human activities or natural occurrences), creating a migration pathway between landfill wastes and groundwater or surface water. Lining of the drainage ditch should eliminate the remaining pathway from groundwater to surface water, thereby making Alternative 4 more desirable for this criterion.

Alternatives 1 and 2 are rated "low" in long-term effectiveness and permanence because they would not control groundwater levels and could allow subsequent contact of landfill wastes with groundwater and/or discharge of contaminated groundwater to surface water.

4.3.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

Alternatives 1 and 2 are rated "low" for this criterion. These alternatives do not address potential reductions in toxicity, mobility, and/or volume of contamination because they would not prevent contact between groundwater and landfill waste.

Alternatives 3 and 4 are rated "moderate" and "high," respectively, for reduction of toxicity, mobility, or volume through treatment. These alternatives would not include treatment of the contaminated media and, therefore, would not actively reduce contaminant toxicity, mobility, and/or volume. However, current concentrations of COCs in groundwater are below remediation goals (Section 2.1.1) and are decreasing (BNI 2002a), thereby reducing toxicity. Nontreatment portions of the alternatives control contaminant mobility, and contaminant volume is remaining constant. These alternatives would prevent contact between groundwater and landfill wastes, thereby protecting against increases in groundwater toxicity and mobilization of contaminants from landfill wastes. However, because Alternative 4 would include lining the adjacent drainage

ditch, it would prevent potential infiltration of ponded water from the ditch into groundwater, thereby assuring separation between landfill waste and the shallow water-bearing zone.

4.3.5 Short-Term Effectiveness

Alternatives 1 and 2 are rated "low" because although the risk to workers posed by their implementation is nonexistent and minimal, respectively, these alternatives are not effective in protecting human health and the environment. Alternatives 1 and 2 do not have a mechanism for achieving the RAOs. Therefore, the time to reach RAOs would be controlled by natural processes and are expected to exceed 100 years.

Alternative 3 is rated "moderate" for short-term effectiveness because this alternative includes institutional controls that would restrict the irrigation of the nearby agricultural fields and thereby maintain the separation between the water table and landfill wastes and the incomplete migration pathway for COCs to groundwater. Alternative 4 is rated "highest" because although implementation activities may result in slightly higher risks to workers, it would be most effective in meeting the RAOs. Similar to Alternative 3, Alternative 4 also includes institutional controls that would prohibit irrigation of the nearby agricultural fields and thereby maintain the separation between the water table and landfill wastes. The lining of the drainage ditch would also effectively eliminate the pathway for contaminated groundwater to contact surface water.

4.3.6 Implementability

Alternatives 3 and 4 are rated "high" and "moderate" for implementability, respectively. These alternatives would involve proven technologies using readily available materials and contractors. Activities requiring coordination with other offices and agencies should be minimal and are standard practices. Alternative 4 was rated lower than Alternative 3 because it would require construction work in the adjacent drainage ditch that would be more difficult to implement than Alternative 3.

Alternatives 1 and 2 are also rated "high" for implementability. Alternative 1 is the most technically feasible alternative because it would require no action and Alternative 2 would require only a reduction (i.e., removal of irrigation restrictions for the adjacent field) to what is currently being implemented.

4.3.7 Cost

Alternative 4 is rated "low" for cost because it has the highest cost. Alternatives 2 and 3 are rated "moderate" for cost. Cost to implement Alternative 2 would be lower than costs for Alternative 3, but Alternative 3 would satisfy RAOs. Alternative 1 is rated "high" for cost because it has no associated costs.

4.3.8 State Acceptance

Alternative 4 is rated "high" for state acceptance. The DTSC and RWQCB both indicated a preference for the most protective alternative in comments (Appendix A) on

the draft FS Report (BNI 2002b), which is Alternative 4. The state did not provide comments on any of the other alternatives.

4.3.9 Community Acceptance

Community acceptance for the alternatives will not be determined until completion of the community review process.

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Section 5
REFERENCES

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BNI. *See* Bechtel National, Inc.

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NEESA. *See* Naval Energy and Environmental Support Activity.

Ogden. *See* Ogden Environmental and Energy Services Co., Inc.

Ogden Environmental and Energy Services Co., Inc. 1992. Letter Report of Quarterly Groundwater Sampling Results at the Magazine Road Landfill, Patrol Road Landfill, Sludge Disposal Area, Fourth Street Fire-Fighting Training Area, Fire-Fighting Training Area East of Hangar Number Three, Northwest Fire Fighting Training Area, Abandoned Fuel Farm, and Runway Burn Area. Naval Air Facility, El Centro, California. October.

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OHM. *See* OHM Remediation Services Corporation.

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APPENDIX A

REGULATORY CORRESPONDENCE

RESPONSE TO COMMENTS
DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: Mark Berscheid – Hazardous Substances Engineer Engineering Services Unit California Environmental Protection Agency Department of Toxic Substances Control To: NAF El Centro Date: April 16, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 1 The FS indicates Alternative 3 will contain provisions for lining the ditch to prevent migration of contaminated groundwater from flowing into surface water. The presence of this aspect of the remedy would appear to indicate a need to address a possible rise in groundwater level sufficient to affect the drainage ditch. Although the FS does not provide the necessary cross section of the site, it is assumed the bottom of the ditch would be above the lower boundary of the landfill wastes, shown in Figure 1-3 as 60 feet below MSL based on the verbal description of the ditch as a maximum of 10 feet bgs. If this is the case, a rise in groundwater sufficient to affect the drainage ditch would most certainly come in contact with the lower boundaries of landfill waste and provide a pathway for the leaching of landfill contamination into groundwater at this site. The ESU recommends the FS address this issue by providing additional information why a landfill waste pathway into groundwater is not addressed in this alternative or include provisions for evaluating the fate and transport of this contaminant pathway.	The lowest portions of the drainage ditch are approximately level with the bottom of landfill wastes. This is indicated in figure 3-2 of the Remedial Investigation Report Site 1, Magazine Road Landfill Naval Air Facility El Centro, California BNI 2002 (RI). The label on Figure 1-3 of the FS that reads, "Approximate lower boundary of landfill wastes: will be changed to read, "Approximate lower boundary of landfill wastes and agricultural drainage ditch". The portion of the final sentence of Section 1.2.2 that reads, "...approximately 10 feet below ground surface along..." will be changed to, "...roughly 10 feet below ground surface (approximately –60 feet MSL) along...". In the FS, increases in water level sufficient to bring groundwater to the level of landfill waste and/or the level of the bottom of the drainage ditch were identified as potential pathways for transport of contamination from landfill wastes to groundwater, and for transport of contaminated groundwater to surface water, respectively. Therefore, process options to protect groundwater and surface water were evaluated in tables 2-3 and 2-4. The process options determined to be applicable for the protection of groundwater were restrictions on irrigation adjacent to the site and continued groundwater monitoring. The process options determined to be applicable for protection of surface water were restrictions on irrigation adjacent to the site and ditch lining. Identification of ditch lining as an applicable process option does not indicate an expectation that groundwater will rise to the level of the bottom of the drainage ditch (as well as the level of the bottom of landfill wastes) rather it indicates that this process option would be applicable for mitigating the potential pathway between groundwater and surface water. Historical water level monitoring (Figure 1-3 of the FS) suggests that irrigation is the controlling variable on water level elevation at the site. This is indicated by groundwater elevation reductions of approximately 5 feet since irrigation was halted adjacent to the landfill. Therefore, in the approved RI, it was concluded that: ➢ Current and foreseeable conditions (greater than 5-foot separation between groundwater and landfill wastes and no irrigation of field adjacent to the site) preclude completion of this pathway (direct contact between groundwater and landfill wastes). ➢ Current and foreseeable conditions (groundwater elevation below the bottom of the drainage ditch and restrictions on field irrigation adjacent to the site) preclude completion of the pathway (discharge of groundwater to surface water through the drainage ditch).

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DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: Mark Berscheid – Hazardous Substances Engineer Engineering Services Unit California Environmental Protection Agency Department of Toxic Substances Control To: NAF El Centro Date: April 16, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 2 The current groundwater level at this site would appear to be highly dependent on the halt to agricultural irrigation in fields adjacent to the site starting in 1998. The FS indicates Alternatives 2 and 3, presented in Section 3 of the FS, contain a provision for restriction of field irrigation near the site. The FS does not provide any information regarding the legal methods that will be used to insure the continued presence of this institutional control necessary for the implementation of these alternatives. The ESU recommends the FS contain information sufficient to address this issue.	The Navy concurs with the conclusion that, "groundwater level at this site would appear to be highly dependent on the halt to agricultural irrigation in fields adjacent to the site starting in 1998". Therefore, the two most highly evaluated remedial alternatives (alternatives 2 and 3) contain a provision for restriction of field irrigation near the site. The basis of this provision is as follows: ➢ general response action – institutional controls, ➢ technology type – land use restrictions, ➢ process option – restrictions on field irrigation. Further specification of the method of restricting field irrigation would be similar to evaluating carbon treatment as a process option for treating wastewater and then specifying the type of carbon, size of treatment vessel, and number of carbon change outs. This over specification would preclude the Navy from using all control methods at its disposal and could result in a less optimal final solution for the site. The most likely methods that would be used include incorporating the restrictions into the Base Master Plan or establishing Memoranda of Agreement between the base and the appropriate regulatory agencies. The legal methods that will be used to insure the continued presence of the institutional controls will be evaluated in accordance with the guidance for Institutional Control Protocol at Open Bases prepared by the California Military Environmental Coordination Committee and will be presented in the RAP.

RESPONSE TO COMMENTS
DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: Mark Berscheid – Hazardous Substances Engineer Engineering Services Unit California Environmental Protection Agency Department of Toxic Substances Control To: NAF El Centro Date: April 16, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 3 Although Section 1.2.5.3, Groundwater, indicates the presence of both halogenated compounds and inorganics above MCLs, Section 1.2.6.3, Groundwater Contaminant Fate and Transport, does not address these contaminants and indicates historical trends of decreasing TPH compounds is sufficient information to state that off-site migration of contaminated groundwater is not considered a potentially complete migration pathway for dissolved phase contamination. In addition, the FS indicates a clay lense is present that will impede the vertical migration of groundwater at this site. The FS does not provide any data to support this assumption in the form of quantitative data. Supporting data could be provided by field testing such as pump test to determine the possible connection of different parts of the aquifer. The FS would appear to have limited data to support the assumption that horizontal migration off-site and vertical migration of contaminated groundwater do not need to be addressed in a site treatment remedy. The ESU recommends the inclusion of data supporting these assumptions in FS or the implementation of actions to obtain the data needed to support these assumptions in the final FS.	As explained in Sections 1.2.5 and 1.2.6 of the FS, information contained in Section 1.2.5 and its subsections 1.2.5.1 – 1.2.5.4 and in Section 1.2.6 and its subsections 1.2.6 .1 – 1.2.6.4 is a summary of the findings from the RI report, unless otherwise noted. Supporting data for these findings is provided in the RI report, which was approved as final by both DTSC and RWQCB, and this information is referenced in the FS report. The FS report does reiterate the accepted conclusion from the RI report that the presence of halogenated compounds (with the exception of 1,2-dichloroehtane which is associated with Site 7 not Site 1) reported above MCLs and inorganics reported above base background levels and MCLs are considered isolated occurrences rather than indications of a release. As explained in Section 1.2.6 of the FS, the information contained in Section 1.2.6 and its subsections, including 1.2.6.3, is a summary of the findings from the RI report, unless otherwise noted. The presence of the generally massive clay unit is indicated in soil boring logs (logs are included in Appendix A to the RI report) for borings drilled at the site. In addition, a cross section depicting the generalized stratigraphic cross section for the site is included as Figure 3-2 of the approved RI report. It is very important to recognize that the FS was prepared as a companion document to the approved RI report. And that to avoid excessive redundancy, only the findings of the RI report are repeated in the FS. The reader is referred to the RI report for supporting data including historical groundwater monitoring results and site background data including hydrogeology.

RESPONSE TO COMMENTS
DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: Isaac Hirbawi California Environmental Protection Agency Department of Toxic Substances Control To: NAF El Centro Date: April 25, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 1 – Remedial Alternatives: In accordance with the US EPA guidance on presumptive remedies for landfills 1996, this landfill was determined to have the characteristics of a municipal landfill. The components of containment are landfill capping, source area groundwater control to contain contaminants, leachate collection and treatment, landfill gas collection and treatment, and institutional controls to supplement engineering controls. The multiplayer cover system is already in place, leachate generation is negligible due to low permeability of the landfill cover system and low groundwater levels, and landfill gas is well below action levels. The only portion of the presumptive remedy applicable to this FS is source area groundwater (GW) control to contain contaminants and institutional controls. Cleanup goals for GW are the waste discharge requirements (WDRs) established by the Regional Water Quality Control Board (RWQCB) Colorado River Basin Region. The remedial alternatives developed and evaluated are: Alternative 1 – No Action; Alternative 2 – GW monitoring and restrictions on field irrigation near Site 1; Alternative 3 – GW monitoring, ditch lining, and restrictions on field irrigation; A comparative analysis of the alternatives is included in this report with Alternatives 2 and 3 having similar results according to the U.S. EPA's nine criteria. The difference is in cost, where Alternative 3 is approximately $100,000 more than Alternative 2 because of lining the ditch north of the landfill. The ditch is located approximately 30 feet north of the landfill. Ponded water collects along the ditch especially during precipitation and/or irrigation events. The bottom of the ditch is approximately 2 to 5 feet below ground surface (bgs) and gradually deepens to 10 feet bgs in the eastern portion of the landfill. The ponding water provides a source of infiltration to the groundwater and may result in locally increased water levels. These conditions may result in a decreased separation distance of landfill waste from the shallow water-bearing zone. This pathway between the ditch and the GW will always exist and it seems that a rise in the GW table sufficient enough to come in contact with the landfill waste is inevitable. DTSC recommends Alternative 3 which would close this pathway and eliminate this potential problem.	The Navy does not concur that the pathway between ponding water in the ditch and GW will inevitably result in a rise in the GW table sufficient enough to come in contact with the landfill waste. Historical GW level monitoring (See Figure 1-3 of the FS) indicates that irrigation or a lack thereof near the landfill is the controlling factor on GW elevation. Therefore, because both Alternatives 2 and 3 require restrictions on irrigation near the landfill, both alternatives were rated high for long-term effectiveness and permanence However, the Navy does recognize that surface water infiltration to GW from the unlined drainage ditch does present the potential for localized increases in GW elevation. This potential and DTSC's stated preference for Alternative 3 will be factored into the selection of the final remedy.

RESPONSE TO COMMENTS DRAFT FEASIBILITY STUDY (FS) REPORT FOR INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL, NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA	
Originator: Isaac Hirbawi California Environmental Protection Agency Department of Toxic Substances Control To: NAF El Centro Date: April 25, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 2 – Remedial Action Plan A Remedial Action Plan (RAP) to document the selected remedy in the Feasibility Study (FS) according the Health and Safety Code Section 25256.1 needs to be submitted. The RAP must clearly and concisely reflect the remedial action decision. Notice of the Final RAP must be published, and the RAP must be available to the public for comment. Any significant comments, criticisms, and new data submitted by the public requires a response and must be available to the public before the commencement of any action.	Agreed. The Navy plans to prepare a RAP to document the selected remedy once the final FS receives regulatory approval.
Comment 3 – Institutional Controls: A protocol was recently developed by the California Military Environmental Coordination Committee (CMECC) – January 5, 1998) that clarifies the use and documentation of institutional controls (ICs) at active (open) military installations. This protocol discusses generally how to incorporate ICs into a Removal Action Workplan (RAW), Remedial Action Plan (RAP) or Record of Decision (ROD), implementation mechanisms such as a base master plans, process for changing ICs, and verification mechanisms. A copy of the CMECC protocol is attached as a reference.	Comment noted. The CMECC protocol will be utilized during RAP preparation when selecting the mechanisms for implementing the selected remedy for Site 1.

RESPONSE TO COMMENTS
DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: Isaac Hirbawi California Environmental Protection Agency Department of Toxic Substances Control To: NAF El Centro Date: April 25, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 4 – Restrictions to Protect the Remedy: The following language needs to be incorporated in the FS as part of the preferred remedy and carried through the NCP identification and evaluation process. **A) Cap and monitoring systems:** To ensure the integrity of the cap, drainage system and monitoring systems, the future land use owner(s) or user(s) will be restricted from any activity that will adversely impact the cap and monitoring and collection systems or affect the drainage, sub-drainage and erosion controls developed for the cap (including soils, cobbles, gravel, paving, etc.) The following activities are prohibited: I) Any excavation below the surface grade of the cap other than routine maintenance and/or repair of the landfill cap and environmental monitoring systems. II) Any excavation that will affect the drainage, sub-drainage, and erosion controls developed for the cap. III) Any excavation, removal and other action that would disturb the perimeter groundwater monitoring system. **B) Construction:** The future land use owner(s) and/or user(s) will be restricted from any construction that would interfere with and negatively impact the remedy or restrict site access for operation and maintenance of the remedy. **C) Fencing and Signs:** Future land use owner(s) and/or user(s) will be restricted from disturbing or removing any fencing or signs that notify the public of the landfill. A written request or approval must be obtained from the Navy prior to any removal or relocation of fencing and signs. **D) Equipment:** Monitoring of the landfill will include groundwater and leachate monitoring using groundwater wells and other equipment. Future land use owner(s) and/or user(s) will be restricted from disturbing any equipment associated with monitoring and maintenance of the site without prior approval from the Navy and the regulator approval.	The following paragraph will be added at the end of Section 1.2.6.1. Damage to the landfill cap from human activities or natural occurrences presents a potential migration pathway between landfill wastes and groundwater that was not identified in the RI Report (BNI 2001a) but will be addressed. The following bullet will be added to the Remedial Action Objectives in Section 2.1. Maintain the integrity of the landfill cap and monitoring systems. A process option titled Restrictions to Protect the Remedy will be added to the institutional actions general response action for the technology type of land-use restrictions. The language used for parts A, B, C, and D of the comment will be included in the description column of Tables 2-3 and 2-4. The process option will be identified as potentially applicable in the screening column of Tables 2-3 and 2-4. This process option will be added to Alternatives 2 and 3 and will be carried though the alternative evaluation process. Inclusion of this process option will not change the alternative's screening results, detailed analysis results, or comparative analysis results.

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Originator: Isaac Hirbawi California Environmental Protection Agency Department of Toxic Substances Control To: NAF El Centro Date: April 25, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 5 DTSC will prepare an Initial Study as well as an Environmental Impact Report or Negative Declaration to determine if this project may result in a significant effect upon the environment subject to the requirements of the California Environmental Quality Act (CEQA); Section 21000 of the Public Resources Code. Please contact Ms. Leticia Hernandez, DTSC Public Participation Specialist, at (714) 484-5488 for any information on Fact Sheet requirements and CEQA public notice.	Comment noted.
General Comment: The purpose of this FS is to develop and evaluate the remedial action alternatives for mitigating risks to human health and the environment from chemicals of concern (COCs) at Site 1. The remedial alternatives developed and evaluated are: Alternative 1 – No Action; Alternative 2 – Groundwater (GW) monitoring and restrictions on field irrigation near Site 1; and Alternative 3 – GW monitoring, ditch lining, and restrictions on field irrigation. The FS does not specify which is the preferred alternative to be implemented. The Navy needs to select the alternative that will be documented into the Remedial Action Plan (RAP) report.	The Navy concurs that a preferred alternative is not specified in the FS report. Per U.S. EPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under Cercla. U.S. EPA 1988. Section 6.3 states, " Following completion of the RI/FS, the results of the detailed analyses, when combined with the risk management judgments made by the decisions-maker become the rationale for selecting a preferred alternative and preparing the proposed plan." Therefore, the Navy will select a preferred alternative and present it in the RAP once the final FS receives regulatory approval. DTSC's preference for Alternative 3 will be factored into the selection of the preferred alternative.

RESPONSE TO COMMENTS
DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: David M Virginia – Environmental Specialist (A) California Regional Water Quality Control Board Colorado River Basin Region To: NAF El Centro Date: May 20, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 1 Section 1.2.6.3 refers to a "lower, generally massive clay unit (that) impedes vertical advection of groundwater at Site 1." Please provide geologic cross sections through all Site 1 wells that, to the extent practicable, illustrates the clay unit described and its continuity across the site.	As explained in Section 1.2.6 of the FS, the information contained in Section 1.2.6 and its subsections, including 1.2.6.3, is a summary of the findings from the Remedial Investigation Report Site 1, Magazine Road Landfill Naval Air Facility El Centro, California BNI 2002 (RI) (which was approved as final by both DTSC and RWQCB), unless otherwise noted. The presence of the generally massive clay unit is indicated in soil boring logs (logs are included in Appendix A to the RI report) for borings drilled at the site. In addition, a cross section depicting the generalized stratigraphic cross section for the site is included as Figure 3-2 of the approved RI report. The FS was prepared as a companion document to the approved RI report. To avoid excessive redundancy, only the findings of the RI report are repeated in the FS. The reader is referred to the RI report for supporting data including subsurface conditions and hydrogeology.
Comment 2 Section 1.2.3, page 1-6, notes that the "RWQCB issued Waste Discharge Requirements (WDR's) and an associated Monitoring and Reporting Program for Site 1 in March 1999." Section 3.1 states that "Groundwater monitoring is required in order to comply with RWQCB site waste discharge requirements. Therefore, groundwater monitoring will be included in all of the developed remedial alternatives." The Waste Discharge Requirements are in place in order for the closure of the landfill to be in compliance with the California Water Code and the California Code of Regulations, Title 27. Title 27, regulations that address groundwater monitoring have been identified as potential ARAR's for this feasibility study (Section B4.2.2.3 page B4-3). Additionally, Title 27 regulations that address landfill closure and post-closure maintenance are in place for a minimum of 30 years and thus are still relevant. Section B4.2.2.2 of the FS notes that NAF El Centro is required to implement the Monitoring and Reporting Program No. 99-010", and the WDR's have been identified as potential ARARs as well.	WDR number 9 part d Points of Compliance reads as follows, "The Points of Compliance are the downgradient monitoring wells EC1-MW2, EC1-MW3 and EC7-MW11 as shown on Attachment No.2, and extends down through the Zone of Saturation." These wells have not been sampled in recent sampling events because they were dry or contained insufficient water for sampling. In the RWQCB approved Annual Monitoring Report for IR Site 1, Magazine Road Landfill 2001/2002 prepared by BNI and dated March 2002 the following was recommended: ➢ Wells EC1-MW2, EC1-MW3 and EC7-MW11 should be removed from the WDR's and destroyed because of their consistently dry or near-dry conditions (these wells have subsequently been destroyed). ➢ A deeper well should be installed in the vicinity of EC7-MW11 (this well has subsequently been installed and designated EC1-MW9). ➢ Wells EC1-MW7, EC1-MW8, and the deeper well to be installed in the vicinity of EC7-MW11 (EC1-MW9) should be added to the Waste Discharge Requirements. Adding these wells to the WDRs would meet the intent of having POC monitoring wells downgradient of the site The DON will file a request with RWQCB to remove monitoring wells EC1-MW2, EC1-MW3 and EC7-MW11 from the WDRs and add wells, EC1-MW7, EC1-MW8, and EC1-MW9 to the WDRs and that these three wells be designated the new POC wells for IR Site 1.

RESPONSE TO COMMENTS
DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: David M Virginia – Environmental Specialist (A) California Regional Water Quality Control Board Colorado River Basin Region To: NAF El Centro Date: May 20, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 2 Continued Currently the Navy is not in compliance with the provisions of the WDRs, with regard to the point of compliance wells for monitoring groundwater, and the Navy has thus far resisted efforts to correct this discrepancy. Board staff will be unable to approve an FS containing the provision that the monitoring program put forth in the WDRs will be implemented when in fact this is not the case.	
Comment 3 Section 2.1 notes that, "The DON is not invoking points of compliance (POCs) for this remedial action. Please further clarify this statement.	The statement in the FS is incorrect. In **Appendix B (Applicable or Relevant and Appropriate Requirements) Section B2.2.1.2 Cal.Code Regs. tit. 27, Subdivision 1 §§ 20380(a), 20400(a), (c), (d), (e), and (g) and 20405**, the DON recognizes that these sections address the concentration limits and points of compliance for monitoring at waste management units for other than hazardous waste. The DON concludes that these sections are potentially applicable to the IR Site 1 landfill and are included in the WDRs for the landfill (Order No. 99-010). Therefore, the referenced statement will be deleted.
Comment 4 Alternatives 2 and 3 contain the provision that institutional controls will be implemented at this site to restrict irrigation of agricultural fields near the landfill, to prevent increase in water table elevation. This restriction will be used to maintain separation between groundwater and landfill wastes. Board staff is requesting clarification as to what specific institutional controls will be utilized and what legal authority can to used to enforce the restriction.	Further specification of the method of restricting field irrigation in the FS would be similar to evaluating carbon treatment as a process option for treating wastewater and then specifying the type of carbon, size of treatment vessel, and number of carbon change outs. This over specification would preclude the Navy from using all control methods at its disposal and could result in a less optimal final solution for the site. The most likely methods that would be used include incorporating the restrictions into the Base Master Plan or establishing Memoranda of Agreement between the base and the appropriate regulatory agencies. The legal methods that will be used to insure the continued presence of the institutional controls will be evaluated in accordance with the guidance for Institutional Control Protocol at Open Bases prepared by the California Military Environmental Coordination Committee and will be presented in the RAP.

RESPONSE TO COMMENTS
DRAFT FEASIBILITY STUDY (FS) REPORT FOR
INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL,
NAVAL AIR FACILITY (NAF) EL CENTRO, IMPERIAL COUNTY, CALIFORNIA

Originator: David M Virginia – Environmental Specialist (A) California Regional Water Quality Control Board Colorado River Basin Region To: NAF El Centro Date: May 20, 2002	CLEAN 3 Program Contract No. N68711-95-D-7526 CTO-0043/0009 File Code: 0232
Comment 5 The FS does not specify which of the alternatives the Navy would prefer to implement. Board staff recommends Alternative 3; continued groundwater monitoring in accordance with the provisions and specifications set forth in the Waste Discharge Requirements Order 99-010, lining of the irrigation ditch on the north site of the landfill, and institutional controls restricting land use of the agricultural fields adjacent to the landfill.	The Navy concurs that a preferred alternative is not specified in the FS report. Per U.S. EPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under Cercla. U.S. EPA 1988. Section 6.3 states, " Following completion of the RI/FS, the results of the detailed analyses, when combined with the risk management judgments made by the decisions-maker become the rationale for selecting a preferred alternative and preparing the proposed plan." Therefore, the Navy will select a preferred alternative and present it in a RAP once the final FS receives regulatory approval. RWQCB's preference for Alternative 3 will be factored into the selection of the preferred alternative.

CALIFORNIA REGIONAL WATER QUAL ,'Y CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 99-010

WASTE DISCHARGE REQUIREMENTS
FOR
U.S. DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR FACILITY, EL CENTRO, CALIFORNIA

CLOSURE OF INSTALLATION RESTORATION PROGRAM SITE 1 (MAGAZINE RD. LANDFILL)

The California Regional Water Quality Control Board, Colorado River Basin Region, finds that:

1. In 1987, the United States Department of the Navy (DON), Southwest Division Naval Facilities Engineering Command, (hereinafter referred to as the discharger) whose current postal address is 1220 Pacific Highway, San Diego, California 92132-5181, in compliance with the United States Department of Defense (DOD) Installations Restorations (IR) program of 1980, conducted a Preliminary Assessment Site Inspections (PA/SI) of the Naval Air Facility (NAF) El Centro, California.

2. The discharger evaluated 16 sites at NAF, El Centro for potential contamination. The Magazine Road Landfill or IR site 1 was among the 14 sites selected for further investigation.

3. The Magazine Road Landfill (hereinafter referred to as the Landfill) is located southeast of the intersection of Magazine Road and Patrol Road in the northern portion of NAF, El Centro as shown on the Location Map appended to and made a part of this Board Order. The total area occupied by the Landfill is approximately 5.5 acres.

4. The discharger reports that the Landfill was operated as a municipal Landfill between 1965 and 1983. Prior to the initial operation, there was a borrow pit at the site in which the Landfill was located. The waste management practices included monthly burning of waste.

5. It is estimated that, the Landfill's waste stream consisted of 60 percent municipal solid waste, and 40 percent industrial waste including metal plating wastes, asbestos, water-bearing fuels, used lubricating oil and hydraulic fluids, paints, solvents, photographic chemicals, sandblasting grit, pesticides, batteries and spent cartridges

6. The discharger reports that operations stopped at the Landfill in 1983. An estimated total of 90,000 cubic yards of waste had been disposed of at the Landfill. All landfilled wastes were covered with approximately 24 inches of silty sand.

7. Sampling indicates that the undisturbed wastes at Site 1 are classified as Class II, Class III, or inert. Additionally, wastes removed from Sites 3 and 8 were sampled and sorted, and then only wastes classified as inert were discharged at Site 1 for consolidation.

8. Pursuant to the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and National Contingency Plan (NCP) as codified in 40 CFR Part 300, and California Health and Safety Code, the discharger

prepared a Final Action Memorandum/Remedial Action Work Plan (RAWP), including an Engineering Evaluation/Cost Analysis (EE/CA), for the non-time-critical removal actions at the Landfill. In the EE/CA, Chapter 15 Division 3, Title 23, California Code of Regulations (Chapter 15) was identified as an applicable or relevant and appropriate requirement (ARAR). Pursuant to AB1220, Chapter 15 was moved to Division 2, Title 27, California Code of Regulations (Title 27). Therefore, Title 27 is an ARAR for the removal actions at the Landfill.

9. In the RAWP, the discharger recommended the construction of a monolithic cap over the Landfill. The Final Work Plan for the construction of the monolithic cap was approved by the California Department of Toxic Substances Control (DTSC) on April 8, 1998. The DTSC is the California State lead-agency for cleanup oversight at the Landfill.

10. In 1998, the discharger completed the construction of the monolithic cap over the Landfill in accordance with the Final Work Plan dated October 1, 1997. As built, the monolithic cap comprises the following:

a. A six-inch thick protective gravel layer laid at a minimum grade of 3 percent.

b. A minimum of 48 inch thick silty to clayey sand monolithic final cover with a maximum hydraulic conductivity of 1.4×10^{-5} cm/s

c. The 48-inch monolithic final cover is underlain by a geo-synthetic clay liner (GCL).

d. A minimum side slope of 3 (horizontal) to 1 (vertical).

e. Two permanent survey monuments, for monitoring settlements at the closed Landfill.

f. A lined drainage channel constructed around the base of the final cover.

The schematic of the constructed monolithic cap is shown on Attachment No.1 appended to and made a part of this Board Order.

11. The New River and Elder Canal are the only surface water bodies located within one mile of the Landfill.

12. Groundwater samples (Attachment No. 2) beneath the Landfill collected by the discharger in 1991 and 1992 contained total dissolved solids concentrations varying from 2000 mg/l to 30,000 mg/l. The U.S. EPA secondary maximum contaminant level for TDS is 500 mg/l. Pursuant to State Water Resources Control Board "Source of Drinking Water" policy, Resolution No. 88-63, surface and ground waters having a total dissolved solids concentration greater than 3000 mg/l are not suitable for municipal or domestic water supply.

13. The Water Quality Control Plan for the Colorado River Basin Region of California (Basin Plan) was adopted on November 17, 1993 and designates the beneficial uses of ground and surface waters in this Region.

14. The designated beneficial uses of ground waters in the Imperial Hydrologic Unit are:

    a. Municipal supply (MUN)
    b. Industrial supply (IND)

15 Within the Imperial Valley area of the Imperial Hydrologic Unit, much of the ground water is too saline for municipal use.

16. The Board has notified the discharger and all known interested agencies, and persons of its intent to prescribe waste discharge requirements for said discharge and has provided them with an opportunity for a public meeting and an opportunity to submit comments.

17. The Board in a public meeting heard and considered all comments pertaining to this discharge.

18. On March 27, 1997, the DTSC prepared a Mitigated Negative Declaration (State Clearinghouse No. 970-110-27) for the Removal Action (construction of the monolithic cap) pursuant to California Environmental Quality Act (Public Resources Code, Section 21000 et seq.) The Initial Study Checklist determined that a potential exists for contaminants to migrate through groundwater and storm water runoff to adjacent cultivated fields and irrigation canals and ditches. The removal action (construction of a monolithic cap) will decrease contaminant migration and therefore mitigate the potential impact on water quality.

IT IS HEREBY ORDERED, that in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, the discharger shall comply with the following:

A. Prohibitions

1. The discharge or deposit of hazardous waste at this Landfill is prohibited.

2. The discharge or deposit of designated waste (as defined in Title 27) at this Landfill is prohibited.

3. The direct discharge of any waste to any surface waters or surface drainage courses is prohibited.

4. The discharge of waste to land not owned or controlled by the discharger is prohibited.

5. The discharge shall neither cause nor contribute to the contamination or pollution of ground water via the release of waste constituents in either liquid or gaseous phase.

6. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Landfill if such waste constituents could migrate to waters of the State, in either the liquid or the gaseous phase, and cause a condition of contamination or pollution.

B. Specifications

1. The Landfill shall be protected from any washout or erosion of wastes or covering material, and from any inundation which could occur as a result of floods having a predicted frequency of once in 100 years.

2. The discharge shall not cause degradation of any water supply.

3. Waste materials shall be confined to the Landfill as described on Attachment No 2.

4. Surface drainage from tributary areas, and internal site drainage from surface or subsurface sources, shall not contact or percolate through the wastes discharged at the Landfill.

5. The exterior surfaces of the monolithic cap shall be graded and maintained to promote lateral runoff of precipitation and to prevent ponding.

6. The discharger shall implement the attached Monitoring and Reporting Program No. 99-010 and revisions thereto, in order to detect, at the earliest opportunity, any unauthorized release of waste constituents from the Landfill, or any unreasonable impairment of beneficial uses of surface and ground water associated with (caused by) discharges of waste to the Landfill.

7. The discharger shall not cause the concentration of any Constituent of Concern or Monitoring Parameter to exceed its respective background value in any monitored medium at any Monitoring Point assigned to Detection Monitoring pursuant to Part II.C.4. of the attached Monitoring and Reporting Program No. 99-010 and revisions thereto.

8. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of contamination, pollution, or nuisance to occur, as indicated by the most appropriate statistical (or non-statistical) data analysis method and retest method listed in Part III of the attached Monitoring and Reporting Program No. 99-010 and revisions thereto.

9. Water Quality Protection Standard (Standard) for Detection Monitoring. The five parts of the Water Quality Standard (Standard) of Section 20390 of Title 27, California Code of Regulations are as follows:

   a. Constituents of Concern The list of Constituents of Concern (1) for water-bearing media (i.e. ground water, surface water, and soil pore liquid) consists of the combined listing of all constituents in Appendices I and II to 40 CFR Part 258 in addition to TDS, Sulfate, Carbonate, pH, and chloride and (2) for soil pore gas consists of all volatile organic constituents (VOCs) detectable via gas chromatography. Constituents of Concern, and many other terms of art used in this Order, are defined in Part I.C.4. of the attached Monitoring and Reporting Program No. 99-010, which program is hereby incorporated by reference.

   b. Concentration Limits For each Monitoring Point assigned to a Detection Monitoring Program (M&R Part II.C.4.), the Concentration Limit for each Constituent of Concern (or Monitoring Parameter) shall be its background value as obtained during that Reporting Period (defined in M&R Part I.B 10), as follows:

      1. If 10% or more of the samples taken during a given Reporting Period from the Background Monitoring Points for a monitored medium exceed their respective Facility-Specific Method Detection Limit (MDL) - see M&R Part I.B.8. - for a given constituent, then the Concentration Limit for that medium and constituent shall consist of the mean (or median, as appropriate) and the standard deviation (or other measures of central

tendency, as appropriate) of all the background data obtained for that constituent from the medium during that Reporting Period; otherwise

2. The Concentration Limit for that medium and constituent shall be its MDL.

c. Monitoring Points and Background Monitoring Points for Detection Monitoring shall be those listed in Part II.C.4. of the attached Monitoring and Reporting Program No. 99-010, and revisions thereto as shown on Attachment No 2 .

d. Points of Compliance The Points of Compliance are the downgradient monitoring wells EC1-MW2, EC1-MW3 and EC7-MW11 as shown on Attachment No.2, and extends down through the Zone of Saturation.

e. Compliance Period The estimated duration of the compliance Period for this Landfill is 30 years. Each time the Standard is broken (i.e., a release is discovered), the Landfill begins a Compliance Period on the date the Regional Board directs the discharger to begin an Evaluation Monitoring Program. If the discharger's Corrective Action Program (CAP) has not achieved compliance with the Standard by the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the Landfill has been in continuous compliance for at least three consecutive years.

10. Monitoring Parameters for Detection Monitoring

The Monitoring Parameters for water samples include:

1. pH, Total Dissolved Solids (TDS), Chloride, Nitrate Nitrogen, and each VOC that exceeds its respective (facility-specific) MDL in at least ten percent of the background samples from a given water body (surface water body, aquifer, perched zone, or soil-pore liquid) during that Reporting Period. These Monitoring Parameters are subject to the most appropriate statistical test under M&R Part III.A.1.; and

2. VOC_{water}, a composite parameter that encompasses a variety of constituents (VOC). The constituents addressed by the VOC_{water} Monitoring parameter and the special non-statistical analyses it uses are both described in M&R Part III.A.2.a.;

11. Additional Monitoring Points or Background Monitoring Points. The discharger shall, in a timely fashion, install any additional ground water, soil-pore liquid, soil-pore gas, or leachate monitoring devices required to fulfill the terms of any Discharge Monitoring Program issued by the Regional Board's Executive Officer.

C. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 99-010, and revisions thereto, as specified by the Regional Board's Executive Officer.

2. This Board Order does not authorize violation of any federal, state, or local laws or regulations.

3. The discharger shall allow the Regional Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the premises regulated by this Board Order, or the place where records must be kept under the conditions of this Board Order;

b. Have access to and copy, at reasonable times, any records that shall be kept under the conditions of this Board Order;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Board Order; and

d. Sample or monitor at reasonable times, for the purpose of assuring compliance with this Board Order or as otherwise authorized by the California Water Code, any substances or parameters at this location.

4. The discharger must comply with all of the conditions of this Board Order. Any noncompliance with this Board Order constitutes a violation of the Porter-Cologne Water Quality Control Act and is grounds for enforcement action.

5. This Board Order does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

6. The discharger shall comply with the following:

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Board Order, for a period of at least 5 years from the date of the sample, measurement or report. This period may be extended by request of the Regional Board's Executive Officer at any time.

c. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements.
2. The individual(s) who performed the sampling or measurements.
3. The date(s) analyses were performed.
4. The individual(s) who performed the analyses.
5. The results of such analyses.

7. Unless otherwise approved by the Regional Board's Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. All analyses shall be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants", promulgated by the United States Environmental Protection Agency.

8. Adequate measures shall be taken to assure that flood or surface drainage waters do not erode or otherwise render portions of the discharge facilities inoperable.

9. The discharger is the responsible party for the waste discharge requirements and the monitoring and reporting program for the Landfill. The discharger shall comply with all conditions of these waste discharge requirements. Violations may result in enforcement actions, including Regional Board Orders or court orders, requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Regional Board.

10. The discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances), which are installed or used by the discharger to achieve compliance with conditions of this Board Order.

11. All maintenance performed will be reported with the monitoring reports as required.

12. The discharger shall furnish, under penalty of perjury, technical monitoring program reports, and such reports shall be submitted in accordance with the specifications prepared by the Regional Board's Executive Officer. Such specifications are subject to periodic revisions as may be warranted.

13. The discharger may be required to submit technical reports as directed by the Regional Board's Executive Officer.

14. The discharger shall develop and implement a Storm Water Pollution Prevention Plan for this facility. The plan must be submitted to the Regional Board's Executive Officer for review and approval no later than 90 days after adoption of this Board Order.

15. All storm water discharges from this facility must comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies, regarding discharges of storm water to storm water drain systems or other courses under their jurisdiction.

16. The discharger shall submit a Notice of Intent (NOI) to the State Water Resources Control Board to be covered under the Statewide General NPDES Permit for Storm Water Discharges Associated with Industrial Activities, Order No. 91-13-DWQ (as amended by Order No. 92-12-DWQ), NPDES No. CAS000001. The discharger shall comply with all the discharge prohibitions, receiving water limitations, and provisions of the General Permit, including the development and implementation of a Storm Water Pollution Prevention Plan. The Storm Water Pollution Prevention Plan shall be submitted to the Regional Board's Executive Officer for review and approval no later than 90 days after the adoption of this Board Order.

17. The discharger shall submit a sampling and monitoring plan for storm water discharges to the Regional Board's Executive Officer for review and approval no later than 90 days after the adoption of this Board Order. The plan shall meet the minimum requirements of Section B, Monitoring Program and Reporting Requirements of the Statewide General NPDES Permit for Storm Water Discharges Associated with Industrial Activities, Order No. 91-13-DWQ (as amended by Order No. 92-12-DWQ), NPDES No. CAS000001

18. Storm water discharges from the facility shall not cause or threaten to cause pollution or contamination or nuisance.

19. Storm water discharges from the facility shall not contain hazardous substances equal to or in excess of a reportable quantity listed in 40 CFR Part 117 and/or CFR Part 302.

20. The discharger shall immediately notify the Regional Board of any flooding, slope failure or other change in site conditions which could impair the integrity of waste containment facilities or of precipitation and drainage control structures.

21. The discharger shall maintain visible monuments identifying the boundary limits of the entire waste management facility.

22. The discharger shall comply with all applicable provisions of Title 27 that are not specifically referred to in this Board Order.

23. Annually, prior to the first day of November, any necessary erosion control measures shall be implemented and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the site; and the report thereon shall be submitted to the Regional Board by November 15 of each year.

24. This Board Order is subject to Regional Board review and updating, as necessary to comply with changing State or Federal laws, regulations, policies, or guidelines, or changes in the discharge characteristics.

25. The Regional Board considers the property owner to have a continuing responsibility for correcting any problems which may arise in the future as a result of this waste discharge.

26. The discharge shall neither cause nor contribute to the contamination or pollution of ground water via the release of waste constituents in either liquid or gaseous phase.

27. The discharger shall comply with all prohibitions, specifications and provisions of this Board Order immediately upon adoption of this Board Order.

28. At any time, the discharger may file a written request (including appropriate supporting documents) with the Regional Board's Executive Officer, proposing appropriate modifications to the Monitoring and Reporting Program. The request may address changes:

a. To any statistical method, non-statistical method, or retest method used with a given constituent or parameter;

b. To the manner of determining the background value for a constituent or parameter;

c. To the method for displaying annual data plots;

d. To the laboratory analytical method used to test for a given constituent or parameter;

e. To the media being monitored (e.g., the addition of soil-pore gas to the media being monitored); or

f. To the number or placement of Monitoring Points or Background Monitoring Points for a given monitored medium; or

g. To any aspect of monitoring or QA/QC after receiving and analyzing such a report, the Regional Board's Executive Officer either shall reject the proposal for reasons listed, or shall incorporate it, along with any necessary changes, into the attached Monitoring and Reporting Program. The discharger shall implement any changes in the Monitoring and Reporting Program proposed by the Regional Board's Executive Officer upon receipt of a revised Monitoring and Reporting Program.

The report due date is within two months of realizing that a change is appropriate, or of being notified by the Regional Board's Executive Officer.

I, Philip A. Gruenberg, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on March 11, 1999.

Executive Officer

OF CALIFORNIA - CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN • REGION 7
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98-07-07 A07:07 IN

June 30, 1998

Mr. Fred Rivera
Installation Restoration Program Manager
Public Works Department (Code 341)
Naval Air Facility El Centro
El Centro, California 92243-5001

RE: Beneficial Use Designation

The Colorado River Basin Water Quality Control Plan (i.e. Basin Plan) designates beneficial uses for ground and surface waters in the Colorado River Basin Region. The Naval Air Facility at El Centro (NAFEC) is located within the Imperial hydrologic unit. The designated beneficial uses for the Imperial hydrologic unit include municipal and industrial (Table 2-5, Colorado Basin Plan). Please note that the municipal usage is limited to a small area of the Imperial hydrologic groundwater unit.

Currently, the upper aquifer at NAFEC has no known beneficial use. This is due to the poor quality of the groundwater (total dissolved solids commonly exceeds 3000 mg/l), and low aquifer yield.

For further information, please refer to the Colorado River Basin Water Quality Control Plan.

Joan Stormo
JOAN STORMO
Associate Engineering Geologist

JS/hs

File: DoD, NAFEC

cc: Mr. Richard Hubbell, DTSC, Cypress
Mr. Michael Riley, SW Div., San Diego

DUPLICATE

OPTIONAL FORM 99 (7-90) FAX TRANSMITTAL # of pages ▶
To GREG CAGLE From MIKE RILEY
Dept./Agency BNI Phone # (619) 532-3686
Fax # 687-8787 Fax # (619) 532-1242
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

TOTAL P.01

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 99-010
FOR
U. S. DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR FACILITY, EL CENTRO, CALIFORNIA

CONSISTS OF

PART I, PART II AND PART III

PART I

A. GENERAL

1. Responsibilities of waste dischargers are specified in Section 13225(a), 13267(b), and 13387(b) of the California Water Code, and the State Water Resources Control Board's Resolution No. 93-062. This self-monitoring program is issued pursuant to Specification No. 6 of Regional Board Order No. 99-010. The principal purposes of a self-monitoring program by a waste discharger are:

   a. To document compliance with waste discharge requirements and prohibitions established by the Regional Board;

   b. To facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge;

   c. To conduct water quality analyses;

2. Summary of Monitoring and Reporting Requirements:

Monitoring Activity	Monitoring Frequency	Reporting Frequency
a. On-site observations	Monthly	Twice annually in the semi-annual monitoring report (SMR)
b. Groundwater monitoring		
1. Monitoring Parameters	Twice Annually	Twice Annually in SMR
2. COC Parameters	Once in five years	Once in five years in 2nd SMR
c. Summary of all activities	Annually	Annually in 2nd SMR

B. DEFINITION OF TERMS

1. The "Monitored Media" are those water- or gas-bearing media that are monitored pursuant to this Monitoring and Reporting Program. The Monitored Media may include: (1) ground water in the uppermost aquifer, in any other portion of the zone of saturation (Section 20164 of Title 27) in which it would be reasonable to anticipate that waste constituents migrating from the Landfill could be detected, and in any perched zones underlying the Landfill, (2) any bodies of surface water that could be measurably affected by a release, (3) soil-pore liquid beneath and/or adjacent to the Landfill, and (4) soil-pore gas beneath and/or adjacent to the Landfill.

2. The "Constituents of Concern (COC)" are those constituents which are likely to be in the waste in the Landfill or which are likely to be derived from waste constituents, in the event of a release. The Constituents of Concern for this Landfill are all constituents listed in Appendix II to 40 CFR Part 258.

3. The "Monitoring Parameters" consist of a short list of constituents and parameters used for the majority of monitoring activity. The Monitoring Parameters for this Landfill are listed below:

a. For Groundwater

1. All constituents listed in Appendix I to 40 CFR Part 258
2. Chloride
3. Sulfate
4. Nitrate - Nitrogen

Monitoring for the short list of Monitoring Parameters constitutes "indirect monitoring", in that the results are used to indirectly indicate the success or failure of adequate containment for the longer list of Constituents of Concern.

4. "Volatile Organics Composite Monitoring Parameter for Water (VOC_{water})" and the "Volatile Organics Composite Monitoring Parameter for Soil-Pore Gas (VOC_{spg}) are composite Monitoring Parameters addressing all volatile organic constituents detectable in a sample of water or soil-pore gas, respectively. (See Part III.A.2. of this Program for additional discussion of these Monitoring Parameters).

5. "Standard Observations" refers to:

a. Along the perimeter of the Landfill:

1. Evidence of liquid leaving or entering the Landfill, estimated size of affected area, and flow rate (show affected area on map);

2. Evidence of odors: presence or absence, characterization, source, and distance of travel from source; and

3. Evidence of erosion and/or of exposed refuse.

b. For the Landfill:

1. Evidence of ponded water at any point on the waste management facility (show affected area on map);

2. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;

3. Evidence of erosion and/or of day lighted refuse; and

6. "Standard Analysis and Measurements", refers to:

   a. Turbidity (only for water samples) in NTU:

   b. Water elevation to the nearest 1/100th foot above mean sea level (only for groundwater monitoring); and

   c. Sampling, testing for and statistical/non-statistical analysis of the Monitoring Parameters.

7. "Matrix Effect" refers to any increase in the Method Detection Limit or Practical Quantitation Limit for a given constituent as a result of the presence of other constituents - either of natural origin or introduced through a release - that are present in the sample of water or soil-pore gas being analyzed.

8. "Facility-Specific Method Detection Limit (MDL)", for a given analytical laboratory using a given analytical method to detect a given constituent (in spite of any Matrix Effect) means the lowest concentration at which the laboratory can regularly differentiate - with 99% reliability - between a sample which contains the constituent and one which does not.

9. "Facility-Specific Practical Quantitation Limit (PQL)", for a given analytical laboratory using a given analytical method to determine the concentration of a given constituent (in spite of any Matrix Effect) means the lowest constituent concentration the laboratory can regularly quantify within specified limits of precision that are acceptable to the Regional Board's Executive Officer.

10. "Reporting Period" means the duration separating the submittal of a given type of monitoring report from the time the next iteration of that report is scheduled for submittal; therefore, the reporting period for Constituents of Concern is every five years, and Monitoring Parameters is six months ("Summer/Fall" = April 1 to September 30; "Winter/Spring" = October 1 to March 31). The Reporting Period for the Annual Summary Report extends from April 1 of the previous year to March 31 of the current year The due date for any given report will be 30 days after the end of its Reporting Period, unless otherwise stated.

11. "Receiving Waters" refers to any surface water which actually or potentially receives surface or ground waters which pass over, through, or under waste materials or contaminated soils.

12. "Affected Persons" refers to all individuals who either own or reside upon the land that directly overlies any part of that portion of a gas-or liquid-phase release that has migrated beyond the facility boundary.

C. SAMPLING AND ANALYTICAL METHODS

1. Sampling collection, storage, and analysis shall be performed according to the most recent version of Standard USEPA methods, and in accordance with an approved sampling and analysis plan. Water and waste analysis shall be performed by a laboratory approved for these analyses by the State of California. Specific methods of analysis must be identified. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board's Executive Officer prior to use. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements. In addition, the discharger is responsible for seeing that the laboratory analysis of all samples from Monitoring Points and Background Monitoring Points meets the following restrictions:

   a. The methods and analysis and the detection limits used must be appropriate for the expected concentrations. For detection monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e. "trace" or "ND") in data from Background Monitoring Points for that medium, the analytical methods having the lowest "facility-specific method detection limit (MDL)", defined in Part I.C.8., shall be selected from among those methods which would provide valid results in light of any "Matrix Effects" (defined in Part I.C.7.) involved.

   b. "Trace" results, results falling between the MDL and the facility-specific practical quantitation limit (PQL), shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run and by an estimate of the constituents concentration.

   c. MDLs and PQLs shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. If the lab suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with an estimate of the detection limit and quantitation limit actually achieved.

   d. All QA/QC data shall be reported, along with the sample results to which it applies, including the method, equipment, and analytical detection limits, the recovery rates, an explanation of any recovery rate that is less than 80%, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recovery.

   e. Upon receiving written approval from the Regional Board's Executive Officer, an alternative statistical or non-statistical procedure can be used for determining the significance of analytical results for a constituent that is a

common laboratory contaminant (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) during any given Reporting Period in which QA/QC samples show evidence of laboratory contamination for that constituent. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Regional Board staff.

f. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.

g. In cases where contaminants are detected in QA/QC samples (i.e. field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.

h. The MDL shall always be calculated such that it represents a concentration associated with a 99% reliability of a non-zero result.

D. RECORDS TO BE MAINTAINED

1. Written reports shall be maintained by the discharger or laboratory, and shall be retained for a minimum of five years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board. Such records shall show the following for each sample:

a. Identity of sample and of the Monitoring Point or Background Monitoring Point from which it was taken, along with the identity of the individual who obtained the sample;

b. Date and time of sampling;

c. Date and time that analyses were started and completed, and the name of the personnel performing each analysis;

e. Complete procedure used, including method of preserving the sample, and the identify and volumes of reagents used;

f. Calculations of results; and

g. Results of analyses, and the MDL and PQL for each analysis.

E. REPORTS TO BE FILED WITH THE BOARD

1. A written "Detection Monitoring Report" shall be submitted twice annually (Part II.C.2.), in addition to an "Annual Summary Report" (Part I.E.3.). Every five years, the discharger shall submit a report concerning the direct analysis of all Constituents of Concern as indicated in Part II.C.3. ("COC Report"). All reports shall be submitted no later than one month following the end of their respective Reporting Period. The reports shall be comprised of at least the following:

a. Letter of Transmittal

A letter transmitting the essential points in each report shall accompany each report. Such a letter shall include a discussion of any requirement violations found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations. If the discharger has previously submitted a detailed time schedule for correcting said requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice-president or above, or by his/her duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct;

b. Each Detection Monitoring Report and each COC Report shall include a compliance evaluation summary. The summary shall contain at least:

1. For each monitored ground water body, a description and graphical presentation of the velocity and direction of the ground water flow under/around the Landfill, based upon water level elevations taken during the collection of the water quality data submitted in the report;

2. Pre-Sampling Purge for Samples Obtained From Wells: For each monitoring well addressed by the report, a description of the method and time of water level measurement, of the type of pump used for purging and the placement of the pump in the well, and of the method of purging (the pumping rate, the equipment and methods used to monitor field pH, temperature, and conductivity during purging, the calibration of the field equipment, results of the pH, temperature, conductivity, and turbidity testing, the well recovery time, and the method of disposing of the purge water);

3. Sampling: For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the type of pump - or other device - used and its placement for sampling, and a detailed description of the sampling procedure (number and description of the samples, field blanks, travel blanks, and duplicate samples taken, the type of containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations).

4. Post-Sampling (Section 20415(e)(12)(B) of Title 27): For each monitoring well addressed by the report, a description of how the well was purged to remove all portions of the water that was in the well bore while the sample was being taken.

c. A map or aerial photograph showing the locations of observation stations, Monitoring Points, and Background Monitoring Points;

d. For each Detection Monitoring Report and each COC Report, include laboratory statements of results of all analyses demonstrating compliance with Part I.B.;

e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities;

f. A summary and certification of completion of all Standard Observations (Part I.C.5.) for the Landfill, and for the perimeter of the Landfill.

2. CONTINGENCY REPORTING

a. The discharger shall report by telephone concerning any seepage from the disposal area immediately after it is discovered. A written report shall be filed with the Regional Board within seven days, containing at least the following information:

1. A map showing the location(s) of seepage;
2. An estimate of the flow rate;
3. A description of the nature of the discharge (e.g., all pertinent observations and analyses); and
4. Corrective measures underway or proposed.

b. Should the initial statistical comparison (Part III.A.1.) or non-statistical comparison (Part III.A.2.) indicate, for any Constituent or Concern of Monitoring Parameter, that a release is tentatively identified, the discharger shall immediately notify the Regional Board verbally as to the Monitoring Point(s) and constituents(s) or parameter(s) involved, shall provide written notification by certified mail within seven days of such determination (Section 20420(j)(1) of Title 27), and shall carry out a discrete retest in accordance with Parts II.C.1., and III.A.3. If the retest confirms the existence of a release, the discharger shall carry out the requirements of Part I.E.2.d. In any case, the discharger shall inform the Regional Board of the outcome of the retest as soon as the results are available, following up with written results submitted by certified mail within seven days of completing the retest.

c. If either the discharger or the Regional Board determines that there is significant physical evidence of a release (Section 20385(a)(3) of Title 27), the discharger shall immediately notify the Regional Board of this fact by certified mail (or acknowledge the Regional Board's determination) and shall carry out the requirements of Part I.E.2.d. for all potentially-affected monitored media.

d. If the discharger concludes that a release has been discovered:

1. If this conclusion is not based upon "direct monitoring" of the Constituents of Concern, pursuant to Part II.C.3., then the discharger shall, within thirty days, sample for all Constituents of Concern at all Monitoring Points and submit them for laboratory analysis. Within seven days of receiving the laboratory analytical results, the discharger shall notify the Regional Board, by certified mail, of the concentration of all Constituents of Concern at each Monitoring Point. Because this scan is not to be tested against background, only a single datum is required for each Constituent of Concern at each Monitoring Point (Section 20420(k)(1) of Title 27;

2. The discharger shall, within 90 days of discovering the release, submit a Revised Report of Waste Discharge proposing an Evaluation Monitoring Program meeting the requirements of Section 20420(k)(5) and Section 20425 of Title 27; and

3. The discharger shall, within 180 days of discovering the release, submit a preliminary engineering feasibility study meeting the requirements of Section 20420(k)(6) of Title 27.

e. Any time the discharger concludes - or the Regional Board Executive Officer directs the discharger to conclude - that a liquid- or gaseous-phase release from the Landfill has proceeded beyond the facility boundary, the discharger shall so notify all persons who either own or reside upon the land that directly overlies any part of the plume (Affected Persons).

1. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the discharger's current knowledge of the nature and extent of the release; and

2. Subsequent to initial notification, the discharger shall provide updates to all Affected Persons - including any newly Affected Persons - within 14 days of concluding there has been any material change in the nature or extent of the release.

3. ANNUAL SUMMARY REPORT

The discharger shall submit an annual report to the Regional Board covering the previous monitoring year. The Reporting Period ends March 31. This report shall contain:

a. A Graphical Presentation of Analytical Data (Section 20415(e)(14) of Title 27). For each Monitoring Point and Background Monitoring Point, submit in graphical format the laboratory analytical data for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents over time for a given Monitoring Point and Background Monitoring Point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. On the basis of any aberrations noted in the plotted date, the Regional Board's Executive Officer may direct the discharger to carry out a preliminary

investigation (Section 20080(d)(2) of Title 27), the results of which will determine whether or not a release is indicated;

b. All monitoring analytical data obtained during the previous two six-month Reporting Periods, presented in tabular form as well as on 3.5" diskettes, either in MS-DOS/ASCII format or in another file format acceptable to the Regional Board's Executive Officer. Data sets too large to fit on a single 1.4 M.B. diskette may be submitted on disk in a commonly available compressed format (e.g., PK-ZIP or NORTON BACKUP). The Regional Board regards the submittal of data in hard copy and on diskette as "...the form necessary for..." statistical analysis (Section 20420(h) of Title 27), in that this facilitates periodic review by the Regional Board's statistical consultant;

c. A comprehensive discussion of the compliance record, and the result of any correction actions taken or planned which may be needed to bring the discharger into full compliance with the waste discharge requirements;

d. A written summary of the ground water and soil-pore gas analyses, indicating any changes made since the previous annual report; and

e. An evaluation of the effectiveness of the leachate monitoring/control facilities, pursuant to Section 20340 (b),(c), & (d) of Title 27.

4. Each report shall contain the following statement:

"I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations."

5. The statement shall be signed by a principal executive officer at the level of vice-president or above, or by his duly authorized representative, if such representative is responsible for the overall operation of the WMF.

Submit all reports to:

California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

PART II: MONITORING AND OBSERVATION SCHEDULE

A. ON-SITE OBSERVATION

Report twice annually, a part of the Monitoring Report (Winter/Spring and Summer/Fall Reporting Periods ending on March 31, and September 30, respectively):

STATION	DESCRIPTION	OBSERVATIONS	FREQUENCY
V-1 through V-'n'	Located on waste disposal area as delineated by a 500-foot grid network	Standard Observations for the Landfill	Monthly
P-1 through P-'n'	Located at equidistant intervals not exceeding 1000 feet around the perimeter of the Landfill	Standard Observations for the Perimeter of the Landfill	Monthly

B. WATER AND SOIL-PORE GAS SAMPLING/ANALYSIS FOR DETECTION MONITORING

Monitoring Parameter Report due twice annually, Constituent of Concern Reports due every five years (details below).

1. Thirty-Day Sample Procurement Limitation. For any given monitored medium, the samples taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given reporting period shall all be taken within a span not exceeding 30 days, and shall be taken in a manner that insures sample independence to the greatest extent feasible (Section 20415(e)(12)(B) of Title 27). Ground water sampling shall also include an accurate determination of the ground water surface elevation and field parameters (temperature, electrical conductivity, turbidity) for that Monitoring Point or Background Monitoring Point (Section 20415(e)(13) of Title 27); ground water elevations taken prior to purging the well and sampling for Monitoring Parameters shall be used to fulfill the Spring and Fall ground water flow rate/direction analyses required under Part II.C.6. Statistical or non-statistical analysis shall be carried out as soon as the data is available, in accordance with Part III of this program.

2. "Indirect Monitoring" for Monitoring Parameters Done Twice-Annually. For each monitored medium, all Monitoring Points assigned to Detection Monitoring (Part II.C.4., below) and all Background Monitoring Points shall be monitored once each Spring and Fall (Winter/Spring and Summer/Fall Reporting Periods ending on March 31 and September 30, respectively) for the Monitoring Parameters listed in Part 1.C.3 of this Monitoring and Reporting Program. Monitoring for Monitoring Parameters shall be carried out in accordance with Parts II.C.1. and III of this Program.

3. "Direct Monitoring" of all Constituents of Concern Every Five Years. In the absence of a release being indicated (1) pursuant to Parts II.C.1. and III.A.3. for a Monitoring Parameter, (2) based upon physical evidence, pursuant to Part I.E.2.c., or (3) by a

study required by the Regional Board's Executive Officer based upon anomalies noted during visual inspection of graphically-depicted analytical data (Part I.E.3.a.), then the discharger shall sample all Monitoring Points and Background Monitoring Points of water-bearing media, not including soil-pore gas, for all Constituents of Concern every fifth year, beginning with the year of adoption of this Board Order, with successive direct monitoring efforts being carried out alternately in the Spring of one year (Report Period ends March 31) and the Fall of the fifth year thereafter (Reporting Period ends September 30). Direct monitoring for Constituents of Concern shall be carried out in accordance with Parts II.C.1. and III of this program, and shall encompass only those Constituents of Concern that do not also serve as a Monitoring Parameter.

4. Monitoring Points and Background Monitoring Points for Each Monitored Medium: The discharger shall sample the following Monitoring Points and Background Monitoring Points in accordance with the sampling schedules given under Parts II.C.2. and II.C.3. (immediately foregoing), taking enough samples to qualify for the most appropriate test under Part III.

   a. For ground water in the uppermost aquifer: The Monitoring Points shall be Point of Compliance wells EC1-MW2, EC1-MW3, and EC7-MW11. The Background Monitoring Point shall be well EC1-MW6.

5. Initial Background Determination: For the purpose of establishing an initial pool of background data for each Constituent of Concern at each Background Monitoring Point in each monitored medium (Section 20415(e)(6) of Title 27):

   a. Whenever a new Constituent of Concern is added to the Water Quality Protection Standard, including any added by the adoption of this Board Order, the discharger shall collect at least one sample quarterly for at least one year from each Background Monitoring Point in each monitored medium and analyze for the newly-added constituent(s); and

   b. Whenever a new Background Monitoring Point is added, including any added by this Board Order, the discharger shall sample it at least quarterly for at least one year, analyzing for all Constituents of Concern and Monitoring Parameters.

6. Quarterly Determination of Ground Water Flow Rate/Direction (Section 20415(e)(15) of Title 27): The discharger shall measure the water level in each well and determine ground water flow rate and direction in each ground water body described in Part II.C.4. at least quarterly, including the times of expected highest and lowest elevations of the water level for the respective ground water body. This information shall be included in the twice-yearly monitoring reports required under Part II.C.2.

PART III: STATISTICAL AND NON-STATISTICAL ANALYSES OF SAMPLE DATA DURING A DETECTION MONITORING PROGRAM

A. DATA ANALYSIS METHODS

1. The discharger shall use the following data analysis methods to compare the downgradient concentration of each monitored constituent or parameter with its respective background concentration to determine if there has been a release from the Landfill. These methods shall be used at the Landfill unless and until the discharger proposes an alternative method for Executive Officer approval. The proposed method shall be in compliance with Title 27 and revision thereto. For any given data set, proceed sequentially down the list of statistical analysis methods listed in Part III.A.1., followed by the non-statistical method in Part III.A.2., using the first method for which the data qualifies. If that analysis tentatively indicates the detection of a release, implement the retest procedure under Part III.A.3.

   a. Statistical Methods. The discharger shall use one of the following statistical methods to analyze Constituents of Concern or Monitoring Parameters which exhibit concentrations exceeding their respective MDL in at least ten percent of the background samples taken during that Reporting Period. Each of these statistical methods is more fully described in the Statistical Methods Discussion which is attached to this Program and is hereby incorporated by reference. Except for pH, which uses a two-tailed approach, the statistical analysis for all constituents and parameters shall be one-tailed (testing only for statistically significant increase relative to background):

      1. One Way Parametric Analysis of Variance ANOVA followed by multiple comparisons This method requires at least four independent samples from each Monitoring Point and Background Monitoring Point during each sampling episode. It shall be used when the background data from the parameter of constituent, obtained during a given sampling period, has not more than 15% of the data below PQL. Prior to analysis, replace all 'trace' determinations with a value halfway between the PQL and the MDL values reported for that sample run, and replace all "non-detect" determinations with a value equal to half the MDL value reported for that sample run. The ANOVA shall be carried out at the 95% confidence level. Following the ANOVA, the data from each downgradient Monitoring Point shall be tested at a 99% confidence level against the pooled background data. If these multiple comparisons cause the Null Hypothesis (i.e., that there is no release) to be rejected at any Monitoring Point, the discharger shall conclude that a release is tentatively indicated from that parameter or constituent;

      2. One Way Non-Parametric ANOVA (Kruskal-Wallis Test), followed by multiple comparisons. This method requires at least nine independent samples from each Monitoring Point and Background Monitoring Point, therefore, the discharger shall anticipate the need for taking more than four samples per Monitoring Point, based upon past monitoring results. This method shall be used when the pooled background data for the parameter or constituent, obtained within a given sampling period, has not more than 50% of the

data below the PQL. The ANOVA shall be carried out 95% confidence level. Following the ANOVA, the data from each downgradient Monitoring Point shall be tested at 99% confidence level against the pooled background data. If these multiple comparisons cause the Null Hypothesis (i.e., that there is no release) to be rejected at any Monitoring Point, the discharger shall conclude that a release is tentatively indicated for that parameter or constituent; or

3. Method of Proportions. This method shall be used if the "combined data set", the data from a given Monitoring Point in combination with the data from the Background Monitoring Points, has between 50% and 90% of the data below the MDL for the constituent or parameter in question. This method (1) requires at least nine downgradient data points per Monitoring Point per Reporting Period, (2) requires at least thirty data points in the combined data set, and (3) requires that $N * P > 5$ (where N is the number of data points in the combined data set and P is the proportion of the combined set that exceeds the MDL); therefore, the discharger shall anticipate the number of samples required, based upon past monitoring results. The test shall be carried out at the 99% confidence level. If the analysis results in rejection of the Null Hypothesis (i.e., that there is no release), the discharger shall conclude that a release is tentatively indicated for that constituent or parameter; or

4. Other Statistical Methods These include methods pursuant to Section 20415(e)(8)(C-E) of Title 27.

b. Non-Statistical Method. The discharger shall use the following non-statistical method for the VOC_{water} Composite Monitoring Parameters and for all Constituents of Concern which are not amenable to the statistical tests under Part III.A.1.; each of these groupings of constituents utilizes a separate variant of the test, as listed below. Regardless of the variant used, the method involves a two-step process: (1) from all constituents to which the variant applies, compile a list of those constituents which exceed their respective MDL in the downgradient sample, yet do so in less than ten percent of the applicable background samples; and (2) (where several independent samples have been analyzed for that constituent at a given Monitoring Point) from the sample which contains the largest number of constituents. Background shall be represented by the data from all samples taken from the appropriate Background Monitoring Points during that Reporting Period (at least one sample from each Background Monitoring Point). The method shall be implemented as follows:

1. For the Volatile Organics Composite Monitoring Parameter for Water Samples (VOC_{water}): For any given Monitoring Point, the VOC_{water} Monitoring Parameter is a composite parameter addressing all VOCs detectable using USEPA Method (NOTE: See Discussion and insert most appropriate method), including at least all 47 VOCs listed in Appendix I to 40 CFR 258, and all unidentified peaks. Compile a list of each VOC which (1) exceeds its MDL in the Monitoring Point sample (an unidentified peak is compared to its presumed (MDL), and also (2) exceeds its MDL in less than ten percent of the samples taken during that Reporting Period from that medium's Background Monitoring Points. The discharger shall conclude that a release is tentatively indicated for the VOC_{water} Composite Monitoring Parameter if

the list either (1) contains two or more constituents, or (2) contains one constituent that exceeds its PQL;

2. For Constituents of Concern: Compile a list of constituents that exceed their respective MDL at the Monitoring Point yet do so in less than ten percent of the background samples taken during that Reporting Period. The discharger shall conclude that a release is tentatively indicated if the list either (1) contains two or more constituents, or (2) contains one constituent which exceeds its PQL.

c. Discrete Retest In the event that the discharger concludes that a release has been tentatively indicated (under Parts III.A.1. or III.A.2.), the discharger shall, within 30 days of this indication, collect two new suites of samples for the indicated Constituent(s) of Concern or Monitoring Parameter(s) at each indicating Monitoring Point, collecting at least as many samples per suite as were used for the initial test. Re-sampling of the Background Monitoring Points is optional. As soon as the data is available, the discharger shall rerun the statistical method (or non-statistical comparison) separately upon each suite of retest data. For any indicated Monitoring Parameter or Constituent of Concern at an affected Monitoring Point, if the test results of either (or both) of the retest data suites confirms the original indication, the discharger shall conclude that a release has been discovered. All re-tests shall be carried out only for the Monitoring Point(s) for which a release is tentatively indicated, and only for the Constituent of Concern or Monitoring Parameter which triggered the indication there, as follows:

1. If an ANOVA method was used, the retest shall involve only a repeat of the multiple comparison procedure, carried out separately on each of the two new suites of samples taken from the indicating Monitoring Point;

2. If the Method of Proportions statistical test was used, the retest shall consist of a full repeat of the statistical test for the indicated constituent or parameter, using the new sample suites from the indicating Monitoring Point;

3. If the non-statistical method was used:

   a. Because the VOC Composite Monitoring parameters (VOC_{www} or VOC_{spg}) each address, as a single parameter, an entire family of constituents which are likely to be present in any landfill release, the scope of the laboratory analysis for each retest sample shall include all VOCs detectable in that retest sample. Therefore, a confirming retest for either parameter shall have validated the original indication even if the suite of constituents in the confirming retest sample(s) differs from that in the sample which initiated the retest;

   b. Because all Constituents of Concern that are jointly addressed in the non-statistical testing under Part III.A.2.c. remain as individual Constituents of Concern, the scope of the laboratory analysis for the non-statistical retest samples shall be narrowed to involve only those constituents detected in the sample which initiated the retest.

B. RESPONSE TO VOC DETECTION IN BACKGROUND

1. Except as indicated in Part III.B.2., any time the laboratory analysis of a sample from a Background Monitoring Point, sampled for VOCs under Part III.A., shows either (1) two or more VOCs above their respective MDL, or (2) one VOC above its respective PQL, then the discharger shall immediately notify the Regional Board by phone that possible background contamination has occurred, shall follow up with written notification by certified mail within seven days,, and shall obtain two new independent VOC samples from that Background Monitoring Point and send them for laboratory analysis of all detectable VOCs within thirty days. If either or both the new samples validate the presence of VOC(s) at that Background Monitoring Point, using the above procedure, the discharger shall:

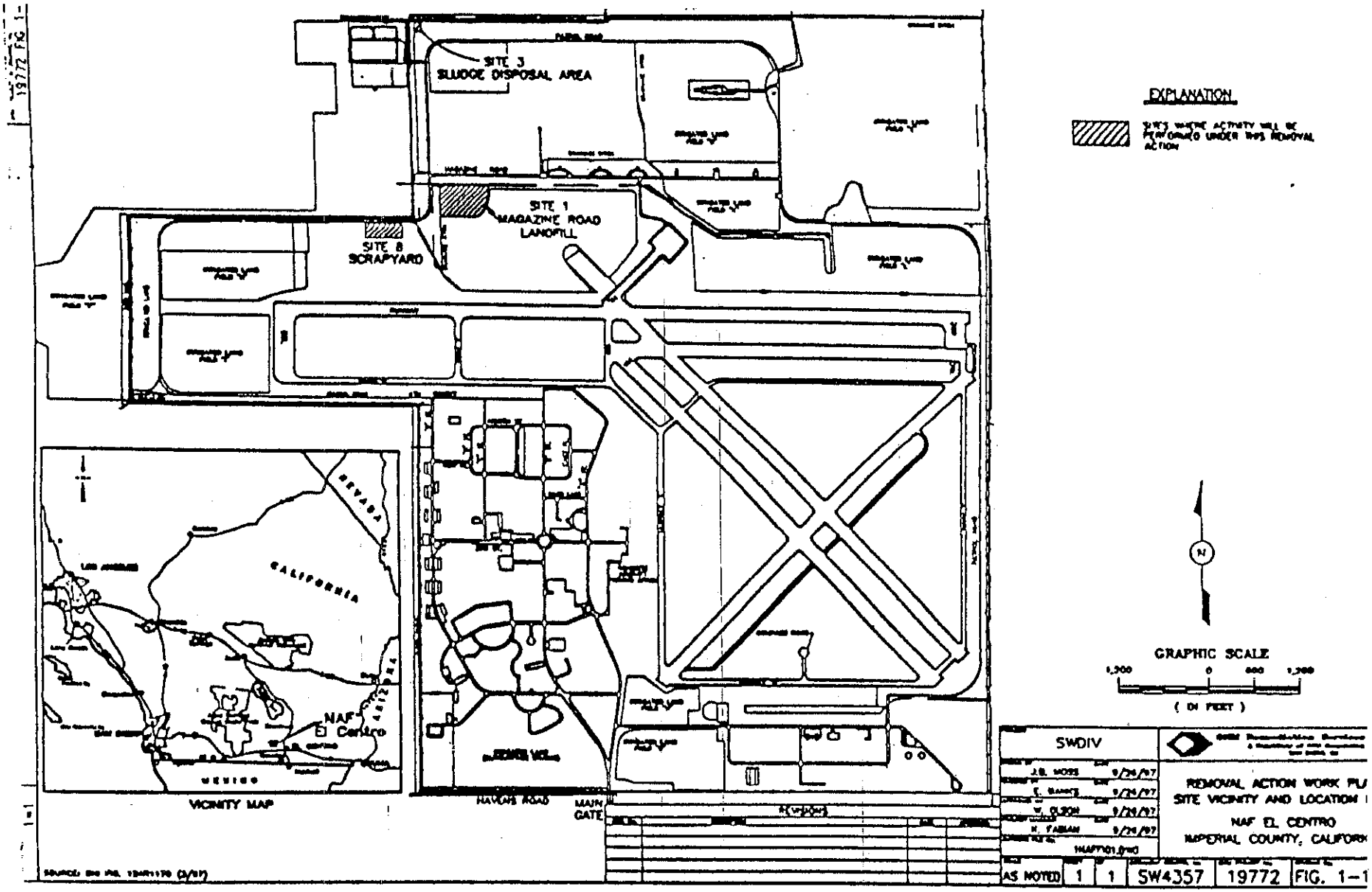
   a. Immediately notify the Regional Board about the VOC(s) verified to be present at that Background Monitoring Point, and follow up with written notification submitted by certified mail within seven days of validation; and

   b. Within 180 days of validation, submit a report, acceptable to the Regional Board's Executive Officer, which examines the possibility that the detected VOC(s) originated from the Landfill and proposing appropriate changes to the Monitoring Program.

2. If the Regional Board's Executive Officer determines, after reviewing the report submitted under Part III.B.1.b., that the detected VOC(s) most likely originated from the Landfill, the discharger shall assume that a release has been detected and shall immediately begin carrying out the requirements of Part I.E.2.d.

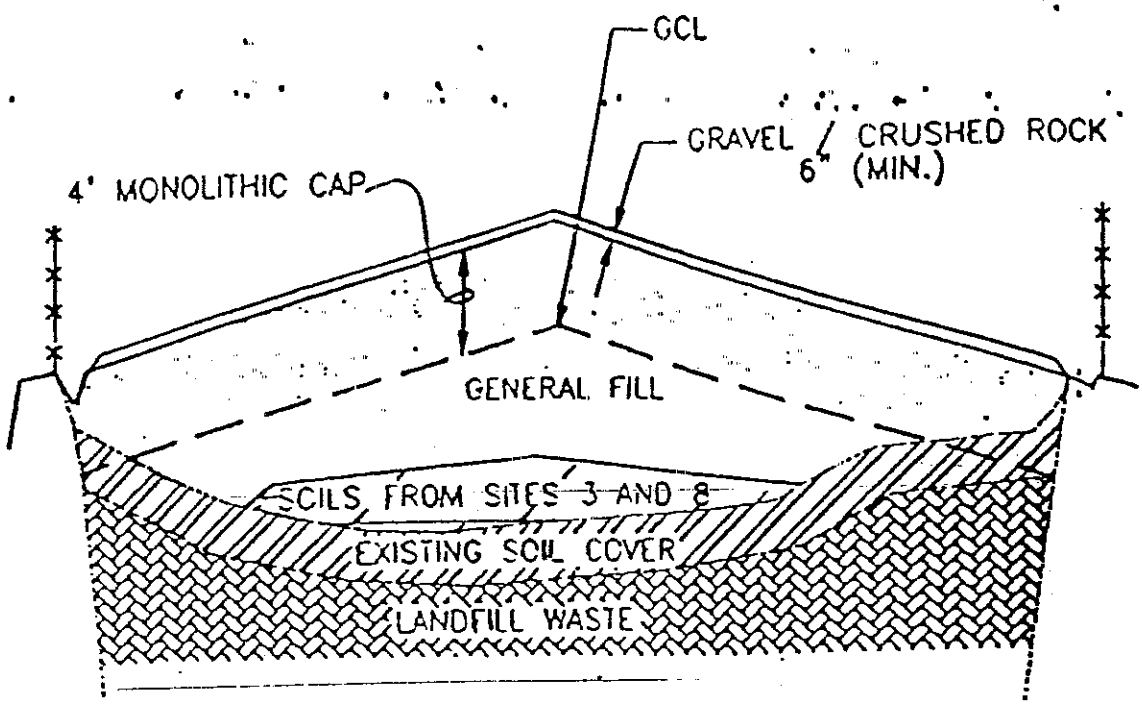
Ordered by: _____
Executive Officer

March 11, 1999
Date



SITE LOCATION MAP

U. S. DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND



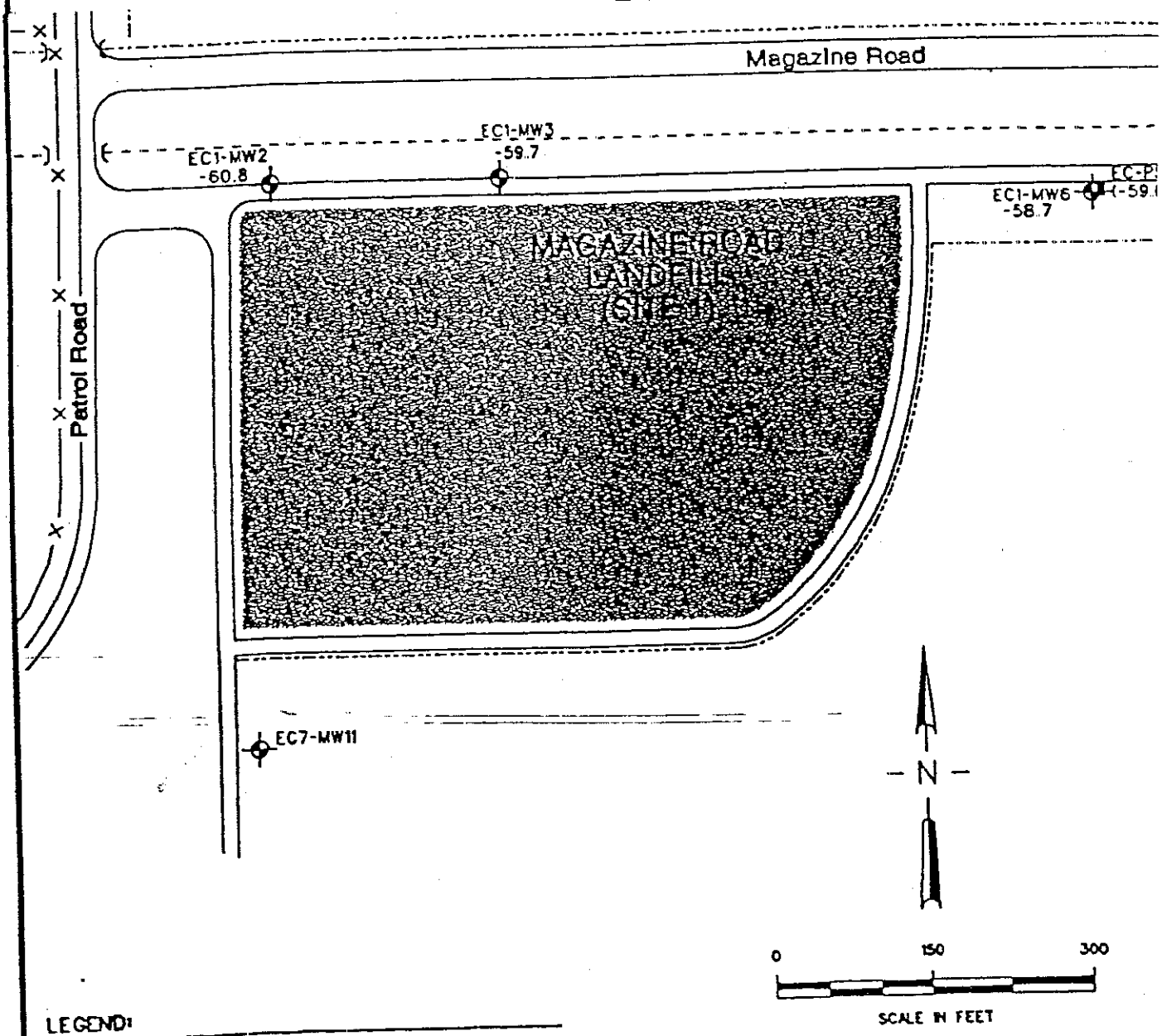
MONOLITHIC CAP

ATTACHMENT NO. 1

U. S. DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR FACILITY, EL CENTRO, CALIFORNIA

BOARD ORDER NO. 99-010

SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND
NAVAL AIR FACILITY, EL CENTRO, CALIFORNIA



LEGEND:

EC1-MW2 -61.1	LOCATION OF MONITORING WELL WITH JANUARY 1997 POTENTIOMETRIC ELEVATION IN FEET FROM MEAN SEA LEVEL
EC-PS (-58.7)	PIEZOMETER LOCATION WITH POTENTIONMETRIC ELEVATION IN FEET FROM MEAN SEA LEVEL
———	MAIN IRRIGATION CANAL
- - - - - - -	MAIN DRAINAGE CANAL
.....	MINOR IRRIGATION OR DRAINAGE CANAL
x ——— x	FENCE

Figure

Site 1 - Magazine Road Landfill

NAF El Centro, Imperial County, California

Bechtel National, Inc.
CLEAN II Program

Date: 2/25/
File No: 150L3
Job No: 22214
Rev: A

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APPENDIX B

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

APPENDIX B

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

TABLE OF CONTENTS

Section Page

B3 LOCATION-SPECIFIC ARARs

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ATTACHMENTS

TABLES

ACRONYMS/ABBREVIATIONS

ACL	alternative concentration limit
AM/RAW	action memorandum/remedial action work plan
APCD	Air Pollution Control District
ARAR	applicable or relevant and appropriate requirement
Basin Plan	Comprehensive Water Quality Control Plan for Colorado River Basin
BAT	best available technology
BCPCT	best conventional pollutant control technology
BMP	Base Master Plan
Cal. Code Regs.	*California Code of Regulations*
Cal/EPA	California Environmental Protection Agency
Cal. Fish & Game Code	California Fish and Game Code
Cal. Pub. Res. Code	California Public Resources Code
Cal. Water Code	California Water Code
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	*Code of Federal Regulations*
ch.	chapter
CIWMB	California Integrated Waste Management Board
CMECC	California Military Environmental Coordination Committee
COC	chemical of concern
CTR	California Toxics Rule
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
div.	division
DoD	Department of Defense
DOI	(United States) Department of the Interior
DON	Department of the Navy
DTSC	(Cal-EPA) Department of Toxic Substances Control
ESA	Endangered Species Act
Exec. Order No.	Executive Order Number
FAWQC	Federal Ambient Water Quality Criteria
Fed. Reg.	*Federal Register*
FS	feasibility study
gpd	gallons per day
HSWA	Hazardous and Solid Waste Amendments

ICAPCD	Imperial County Air Pollution Control District
IR	Installation Restoration (Program)
LDR	land disposal restriction
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
mg/L	milligrams per liter
NAAQS	National Ambient Air Quality Standards
NAF	Naval Air Facility
National Register	National Register of Historic Places
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
POC	point of compliance
ppm	parts per million
Pub. L. No.	public law number
RCRA	Resource Conservation and Recovery Act
Res.	resolution
ROD	Record of Decision
RWQCB	(California) Regional Water Quality Control Board
§	section
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SMCL	secondary maximum contaminant level
STLC	soluble threshold limit concentration
SWRCB	(California) State Water Resources Control Board
TBC	to be considered
TCLP	toxicity characteristic leaching procedure
TDS	total dissolved solids
tit.	title
TTLC	total threshold limit concentration
U.S.	United States
U.S.C.	United States Code
U.S. EPA	United States Environmental Protection Agency
VOC	volatile organic compound

WDR	waste discharge requirement
WET	(California) Waste Extraction Test
WQO	water quality objective
WSRA	Wild and Scenic Rivers Act

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Section B1
INTRODUCTION

This appendix identifies and evaluates potential federal and state of California applicable or relevant and appropriate requirements (ARARs) from the universe of regulations, requirements, and guidance and sets forth the Department of the Navy (DON) determinations regarding those potential ARARs for each remedial action alternative retained for detailed analysis in this feasibility study (FS) report for Installation Restoration (IR) Program Site 1, Naval Air Facility (NAF) El Centro, El Centro, California.

This evaluation includes an initial determination of whether the potential ARARs actually qualify as ARARs, and a comparison for stringency between the federal and state regulations to identify the controlling ARARs. The identification of ARARs is an iterative process. The final determination of ARARs will be made by the DON in the record of decision (ROD) or action memorandum (AM), after public review, as part of the remedial action selection process.

B1.1 SUMMARY OF CERCLA AND NCP REQUIREMENTS

Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 *United States Code* [U.S.C.] Section [§] 9621[d]), as amended, states that remedial actions on CERCLA sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate.

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. The requirement is applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared to the conditions at the site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than federal ARARs.

If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations similar to the circumstances of the proposed response action and are well suited to the conditions of the site (U.S. EPA 1988a). A requirement must be determined to be both relevant and appropriate in order to be considered an ARAR.

The criteria for determining relevance and appropriateness are listed in 40 *Code of Federal Regulations* (C.F.R.) § 300.400(g)(2) and include the following:

- the purpose of the requirement and the purpose of the CERCLA action
- the medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site

- the substances regulated by the requirement and the substances found at the CERCLA site
- the action or activities regulated by the requirement and the remedial action contemplated at the CERCLA site
- any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site
- the type of place regulated and the type of place affected by the release or CERCLA action
- the type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action
- any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resources at the CERCLA site

According to CERCLA ARARs guidance (U.S. EPA 1988a), a requirement may be "applicable" or "relevant and appropriate," but not both. Identification of ARARs must be done on a site-specific basis and involve a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is nevertheless both relevant and appropriate. It is important to explain that some regulations may be applicable or, if not applicable, may still be relevant and appropriate. When the analysis determines that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable (U.S. EPA 1988a).

Tables included in this appendix present each potential ARAR with a determination of ARAR status (i.e., applicable, relevant and appropriate, or not an ARAR). For the determination of relevance and appropriateness, the pertinent criteria were examined to determine whether the requirements addressed problems or situations sufficiently similar to the circumstances of the release or response action contemplated, and whether the requirement was well suited to the site. A negative determination of relevance and appropriateness indicates that the requirement did not meet the pertinent criteria. Negative determinations are documented in the tables of this appendix and are discussed in the text only for specific cases.

To qualify as a state ARAR under CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), a state requirement must be:

- a state standard,
- an environmental or facility siting standard,
- promulgated (of general applicability and legally enforceable),
- substantive (not procedural or administrative),
- more stringent than the federal ARAR,

- identified in a timely manner, and
- consistently applied.

To constitute an ARAR, a requirement must be substantive. Therefore, only the substantive provisions of requirements identified as ARARs in this analysis are considered to be ARARs. Permits are considered to be procedural or administrative requirements. Provisions of generally relevant federal and state statutes and regulations that were determined to be procedural or nonenvironmental, including permit requirements, are not considered to be ARARs. CERCLA 121(e)(1), 42 U.S.C. § 9621(e)(1), states that "No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on-site, where such remedial action is selected and carried out in compliance with this section." The term *on-site* is defined for purposes of this ARARs discussion as "the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action" (40 C.F.R. § 300.5).

Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. Such requirements may, however, be useful, and are "to be considered" (TBC). TBC (40 C.F.R. § 300.400[g][3]) requirements complement ARARs but do not override them. They are useful for guiding decisions regarding cleanup levels or methodologies when regulatory standards are not available.

Pursuant to United States Environmental Protection Agency (U.S. EPA) guidance (U.S. EPA 1988a), ARARs are generally divided into three categories: chemical-specific, location-specific, and action-specific requirements. This classification was developed to aid in the identification of ARARs; some ARARs do not fall precisely into one group or another. ARARs are identified on a site basis for remedial actions where CERCLA authority is the basis for cleanup.

As the lead federal agency, the DON has primary responsibility for identifying federal ARARs at NAF El Centro. Potential federal ARARs that have been identified for the Site 1 FS are discussed in Section B1.2.2. Pursuant to the definition of the term *on-site* in 40 C.F.R. § 300.5, the on-station areas that are part of this action include volatile organic compound (VOC), metals, and petroleum hydrocarbon contamination present at Site 1.

Identification of potential state ARARs was initiated through DON requests that the California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) identify potential state ARARs, an action described in more detail in Section B1.2.3. Potential state ARARs that have been identified for Site 1 are discussed below.

B1.2 METHODOLOGY DESCRIPTION

The process of identifying and evaluating potential federal and state ARARs is described in this subsection.

B1.2.1 General

As the lead federal agency, the DON has primary responsibility for identification of potential ARARs for NAF El Centro. In preparing this ARARs analysis, the DON undertook the following measures, consistent with CERCLA and the NCP:

- identified federal ARARs for each response action alternative addressed in the FS, taking into account site-specific information for Site 1
- reviewed potential state ARARs identified by the state to determine whether they satisfy CERCLA and NCP criteria that must be met in order to constitute state ARARs
- evaluated and compared federal ARARs and their state counterparts to determine whether state ARARs are more stringent than the federal ARARs or are in addition to the federally required actions
- reached a conclusion as to which federal and state ARARs are the most stringent and/or "controlling" ARARs for each alternative

As outlined in Section 2.1 of the FS Report, the remedial action objectives for Site 1 are as follows.

- Prevent the release of chemicals of concern (COCs) (as defined in the waste discharge requirements and Monitoring and Reporting Program [RWQCB 1999b, 2002]) to groundwater. It has been concluded that the presence of metals at concentrations within historical background ranges for groundwater at NAF El Centro (Table 2-1) and VOCs that are associated with the Site 7 petroleum plume (aromatic hydrocarbons and 1,2-DCA) do not indicate a release from Site 1 (BNI 2000).
- Prevent discharge of contaminated groundwater to surface water through the drainage ditch north of the landfill.
- Monitor groundwater to detect releases.

This FS is limited to addressing the groundwater aspects of the landfill that were not addressed in the Action Memorandum/Remedial Action Work Plan (AM/RAW). It does not directly address landfill closure and postclosure requirements. The landfill capping and closure requirements were addressed in the AM/RAW. In addition, actions that address other than those proposed, such as capping or covering the landfill, are not components of the proposed remedial alternatives for Site 1.

Remedial action alternatives retained for detailed analysis in this FS are designed to accomplish these remedial action objectives. The Site 1 remedial action alternatives considered for detailed analysis, and for which an ARARs analysis is presented in this appendix, are as follows:

- Alternative 1 – no action
- Alternative 2 – continued groundwater monitoring

- Alternative 3 – continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect the landfill cap
- Alternative 4 – continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect the landfill cap

B1.2.2 Identifying and Evaluating Federal ARARs

The DON is responsible for identifying federal ARARs as the lead federal agency under CERCLA and the NCP. The final determination of federal ARARs will be made when the DON issues the ROD. The federal government implements a number of federal environmental statutes that are the source of potential federal ARARs, either in the form of the statutes or regulations promulgated thereunder. Examples include the Resource Conservation and Recovery Act (RCRA), the Clean Water Act, the Safe Drinking Water Act, the Toxic Substances Control Act, and their implementing regulations, to name a few. See NCP preamble at 55 *Federal Register* (Fed. Reg.) 8764–8765 (1990) for a more complete listing.

The proposed response action and alternatives were reviewed against all potential federal ARARs, including but not limited to those set forth at 55 Fed. Reg. 8764–8765 (1990), in order to determine if they were applicable or relevant and appropriate utilizing the CERCLA and NCP criteria and procedures for ARARs identification by lead federal agencies.

B1.2.3 Identifying and Evaluating State ARARs

The process of identifying and evaluating potential state ARARs by the state and the DON is described in this subsection.

B1.2.3.1 SOLICITATION OF STATE ARARs UNDER NCP

U.S. EPA guidance (U.S. EPA 1988b) recommends that the lead federal agency consult with the state when identifying state ARARs for remedial actions. In essence, the CERCLA/NCP requirements at 40 C.F.R. § 300.515(2) for remedial actions provide that the lead federal agency request that the state identify chemical- and location-specific state ARARs upon completion of site characterization. The requirements also provide that the lead federal agency request identification of all categories of state ARARs (chemical-, location-, and action-specific) upon completion of identification of remedial alternatives for detailed analysis. The state must respond within 30 days of receipt of the lead federal agency requests. The remainder of this subsection documents the DON's efforts to date to identify and evaluate state ARARs.

B1.2.3.2 CHRONOLOGY OF EFFORTS TO IDENTIFY STATE ARARs

The following chronology summarizes the DON efforts to obtain state assistance in identifying state ARARs for the response action at NAF El Centro. Key correspondence between the DON and the state agencies relating to this effort is included in the Administrative Record for this site and in Attachment A to this appendix.

In a letter dated 18 April 1995, the DON requested that DTSC identify potential state ARARs for several NAF El Centro Sites, including Site 1. A reply was received on 21 June 1995 (DTSC 1995). This reply contained potential ARARs submitted by the California Regional Water Quality Control Board (RWQCB), California Integrated Waste Management Board (CIWMB), Department of Fish and Game, and Imperial County Air Pollution Control District.

These ARARs were considered for the applicability or relevance and appropriateness to the site conditions and objectives of the removal action conducted at Site 1 during 1997.

On 25 October 2001, DTSC solicited potential changes to the ARARs identified in the AM/RAW for Site 1 from the RWQCB and CIWMB. These potential changes were transmitted from DTSC to the DON on 28 November 2001 (Attachment A to this appendix) and included the following:

- State ARARs for solid waste disposal site closure and postclosure maintenance (*California Code of Regulations* [Cal. Code Regs.] Title [tit.] 27, §§ 21130, 21135, 21137, 21140, 21142, 21145, 21150, 21160, 20921-20937, 21180, 21190, 21800, 21830, and 21880)
- California Water Code (Cal. Water Code) Division (div.) 7, §§ 13241, 13243, 13263 (a), and 13360 (Porter-Cologne Water Quality Control Act [Porter-Cologne Act])
- Other provisions of the Porter-Cologne Act
- Water Quality Control Plan for the Colorado River Basin Region (Basin Plan) (Cal. Water Code § 13240)
- State Water Resources Control Board (SWRCB) Resolution (Res.) No. 88-63 (Sources of Drinking Water Policy)
- Cal. Code Regs. tit. 27 (portions previously identified under Cal. Code Regs. tit. 23 in the AM/RAW)

State requirements submitted in 1995 and 2001 and pertinent to the proposed remedial action are considered in the evaluation that follows in Sections B2 through A5. The ARARs for the landfill cap and closure identified in the AM/RAW are not part of this FS and are not included in this ARARs analysis. Instead, this FS is limited to addressing the groundwater aspects of the landfill that were not addressed in the AM/RAW. For example, the State has identified sections of Cal. Code Regs. tit. 27 for landfill capping and closure that were previously identified in the AM/RAW.

B1.3 OTHER GENERAL ISSUES

General issues identified during the evaluation of ARARs for Site 1 are discussed in the following subsections.

B1.3.1 General Approach to Requirements of the Federal Resource Conservation and Recovery Act

The RCRA is a federal statute passed in 1976 to meet four goals: the protection of human health and the environment, the reduction of waste, the conservation of energy and natural resources, and the elimination of the generation of hazardous waste as expeditiously as possible. The Hazardous and Solid Waste Amendments (HSWA) of 1984 significantly expanded the scope of RCRA by adding new corrective action requirements, land disposal restrictions, and technical requirements. RCRA, as amended, contains several provisions that are potential ARARs for CERCLA sites.

Substantive RCRA requirements are applicable to response actions on CERCLA sites if the waste is a RCRA hazardous waste, and either:

- the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement; or
- the activity at the CERCLA site constitutes treatment, storage, or disposal, as defined by RCRA (U.S. EPA 1988a).

The preamble to the NCP indicates that state regulations that are components of a federally authorized or delegated state program are generally considered federal requirements and potential federal ARARs for the purposes of ARARs analysis (55 Fed. Reg. 8666, 8742 [1990]). The state of California received approval for its base RCRA hazardous waste management program on 23 July 1992 (57 Fed. Reg. 32726 [1992]). The state of California "Environmental Health Standards for the Management of Hazardous Waste," set forth in Cal. Code Regs. tit. 22, div. 4.5, were approved by U.S. EPA as a component of the federally authorized state of California RCRA program.

The regulations of Cal. Code Regs. tit. 22, div. 4.5 are, therefore, a source of potential federal ARARs for CERCLA response actions. The exception is when a state regulation is "either broader in scope or more stringent" than the corresponding federal RCRA regulations. In that case, such regulations are not considered part of the federally authorized program or potential federal ARARs. Instead, they are purely state law requirements and potential state ARARs.

The U.S. EPA 23 July 1992 notice approving the state of California RCRA program (57 Fed. Reg. 32726 [1992]) specifically indicated that the state regulations addressed certain non-RCRA, state-regulated hazardous wastes that fell outside the scope of federal RCRA requirements. Cal. Code Regs. tit. 22, div. 4.5 requirements would be potential state ARARs for such non-RCRA, state-regulated wastes.

A key threshold question for the ARARs analysis is whether or not the contaminants at Site 1 constitute federal hazardous waste as defined under RCRA and the state's authorized program or qualify as non-RCRA, state-regulated hazardous waste. A discussion of waste characterization is included in Section B1.4.

B1.3.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA) is applicable to state actions but not to actions of the federal government. Furthermore, U.S. EPA and the DON have determined that the requirements of the National Environmental Policy Act (NEPA) and CEQA are no more stringent than the requirements for environmental review under CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA). Pursuant to the provisions of CERCLA, the NCP, and other federal environmental impact evaluation requirements, selecting a remedial action with feasible mitigation measures and provision for public review is designed to assure that the proposed action provides for short- and long-term protection of the environment and public health. Hence, CERCLA performs the same function as, and is substantially parallel to, the state's requirements under CEQA.

For the reasons set forth above, NEPA and CEQA are not ARARs for CERCLA actions.

B1.4 WASTE CHARACTERIZATION

Selection of ARARs involves the characterization of wastes as described below.

B1.4.1 RCRA Hazardous Waste Determination

Federal RCRA hazardous waste determination is necessary to determine whether a waste is subject to RCRA requirements at Cal. Code Regs. tit. 22, div. 4.5 and other state requirements at Cal. Code Regs. tit. 23, div. 3, Chapter (ch.) 15. The first step in the RCRA hazardous waste characterization process is to evaluate contaminated media at the site(s) and determine whether it constitutes a "listed" RCRA waste. The preamble to the NCP states that "...it is often necessary to know the origin of the waste to determine whether it is a listed waste and that, if such documentation is lacking, the lead agency may assume it is not a listed waste" (55 Fed. Reg. 8666, 8758 [1990]).

This approach is confirmed in U.S. EPA guidance for CERCLA compliance with other laws (U.S. EPA 1988a), as follows:

"To determine whether a waste is a listed waste under RCRA, it is often necessary to know the source. However, at many Superfund sites, no information exists on the source of wastes. The lead agency should use available site information, manifests, storage records, and vouchers in an effort to ascertain the nature of these contaminants. When this documentation is not available, the lead agency may assume that the wastes are not listed RCRA hazardous wastes, unless further analysis or information becomes available that allows the lead agency to determine that the wastes are listed RCRA hazardous wastes."

RCRA hazardous wastes that have been assigned U.S. EPA hazardous waste numbers (or codes) are listed in Cal. Code Regs. tit. 22, §§ 66261.30–66261.33. The lists include hazardous waste codes beginning with the letters "F," "K," "P," and "U."

Knowledge of the exact source of a waste is required for source-specific listed wastes ("K" waste codes). Some knowledge of the nature or source of the waste is required even

for listed wastes from nonspecific sources, such as spent solvents ("F" waste codes) or commercial chemical products ("P" and "U" waste codes). These listed RCRA hazardous wastes are restricted to commercially pure chemicals used in particular processes such as degreasing.

P and U wastes cover only unused and unmixed commercial chemical products, particularly spilled or off-spec products (U.S. EPA 1991a). Not every waste containing a P or U chemical is a hazardous waste. To determine whether a CERCLA investigation-derived waste contains a P or U waste, there must be direct evidence of product use. In particular, all the following criteria must be met. The chemicals must be:

- discarded (as described in 40 C.F.R. § 261.2[a][2]),
- either off-spec commercial products or a commercially sold grade,
- not used (soil contaminated with spilled unused wastes is a P or U waste), and
- the sole active ingredient in a formulation.

Based on historical site information, manifests, and storage records, the original source of the Site 1 COCs is unknown. Therefore, the determination for this FS is that the groundwater does not constitute a RCRA listed hazardous waste.

The second step in the RCRA hazardous waste characterization process is to evaluate potential hazardous characteristics of the waste. The evaluation of characteristic waste is described in U.S. EPA guidance as follows (U.S. EPA 1988a):

"Under certain circumstances, although no historical information exists about the waste, it may be possible to identify the waste as RCRA characteristic waste. This is important in the event that 1) remedial alternatives under consideration at the site involve on-site treatment, storage, or disposal, in which case RCRA may be triggered as discussed in this section; or 2) a remedial alternative involves off-site shipment. Since the generator (in this case, the agency or responsible party conducting the Superfund action) is responsible for determining whether the wastes exhibit any of these characteristics (defined in 40 C.F.R. §§ 261.21–261.24), testing may be required. The lead agency must use best professional judgment to determine, on a site-specific basis, if testing for hazardous characteristics is necessary."

Hazardous waste characteristics, as defined in 40 C.F.R. §§ 261.21–261.24, are commonly referred to as ignitability, corrosivity, reactivity, and toxicity. California environmental health standards for the management of hazardous waste set forth in Cal. Code Regs. tit. 22, div. 4.5 were approved by U.S. EPA as a component of the federally authorized California RCRA program. Therefore, the characterization of RCRA waste is based on the state requirements.

The characteristics of ignitability, corrosivity, reactivity, and toxicity are defined in Cal. Code Regs. tit. 22, §§ 66261.21–66261.24. According to Cal. Code Regs. tit. 22, § 66261.24(a)(1)(A), "A waste that exhibits the characteristic of toxicity pursuant to subsection (a)(1) of this section has the EPA Hazardous Waste Number specified in Table I of this section which corresponds to the toxic contaminant causing it to be

hazardous." Table I assigns hazardous waste codes beginning with the letter "D" to wastes that exhibit the characteristic of toxicity; D waste codes are limited to "characteristic" hazardous wastes.

According to Cal. Code Regs. tit. 22, § 66261.10, waste characteristics can be measured by an available standardized test method or be reasonably classified by generators of waste based on their knowledge of the waste provided that the waste has already been reliably tested or if there is documentation of chemicals used. Groundwater contamination at Site 1 is not ignitable, corrosive, or reactive, as defined in Cal. Code Regs. tit. 22, § 66261.21–66261.23. This determination was based on knowledge of the nature and concentrations of contaminants.

The requirements at Cal. Code Regs. tit. 22, § 66261.24 list the toxic contaminant concentrations that determine the characteristic of toxicity. The concentration limits are in milligrams per liter (mg/L). These units are directly comparable to total concentrations in waste groundwater and surface water. For waste soils, these concentrations apply to the extract or leachate produced by the toxicity characteristic leaching procedure (TCLP).

A waste is considered hazardous if the contaminants in the wastewater or in the soil TCLP extract equal or exceed the TCLP limits. TCLP testing is required only if total contaminant concentrations in soil equal or exceed 20 times the TCLP limits because TCLP uses a 20-to-1 dilution for the extract (U.S. EPA 1988a). Concentrations of all constituents in contaminated groundwater samples at the site were compared to the TCLP limits at Cal. Code Regs. tit. 22, § 66261.24(a)(1). None of the constituent concentrations exceeded the listed concentrations. Therefore, the contaminated groundwater is determined not to be a RCRA hazardous waste, based on the toxicity characteristic. Appropriate analytical testing will be performed if groundwater is removed as part of any potential groundwater remediation efforts (none are proposed).

B1.4.2 California-Regulated, Non-RCRA Hazardous Waste

A waste determined not to be an RCRA hazardous waste may still be considered a state-regulated non-RCRA hazardous waste. The state is broader in scope in its RCRA program in determining hazardous waste. Cal. Code Regs. tit. 22, § 66261.24(a)(2) lists the total threshold limit concentrations (TTLCs) and the soluble threshold limit concentrations (STLCs) for non-RCRA hazardous waste. The state applies its own leaching procedure, a California waste extraction test (WET), that uses a different acid reagent and has a different dilution factor (tenfold). There are other state requirements that may be broader in scope than federal ARARs for identifying non-RCRA wastes regulated by the state. These may be potential ARARs for wastes not covered under federal ARARs. See additional subsections of Cal. Code Regs. tit. 22, § 66261.24.

A waste is considered hazardous if its total concentrations exceed the TTLCs or if the extract concentrations from the WET exceed the STLCs. A WET is required when the total concentrations exceed the STLC but are less than the TTLCs (Cal. Code Regs. tit. 22, div. 4.5, ch. 11, Appendix [app.] II [b]). Concentrations of all constituents in contaminated groundwater samples at the site were compared to the STLC limits at Cal. Code Regs. tit. 22, § 66261.24(a)(2). None of the constituent concentrations

exceeded the listed concentrations. Therefore, the contaminated groundwater is determined not to be a California-regulated non-RCRA hazardous waste, based on the toxicity characteristic. Appropriate analytical testing will be performed if groundwater is removed as part of any potential groundwater remediation efforts (none are proposed).

B1.4.3 Other California Waste Classifications

For waste discharged after 18 July 1997, solid waste classifications at Cal. Code Regs. tit. 27, §§ 20210, 20220, and 20230 are used to determine applicability of waste management requirements. These are summarized below.

A "designated waste" under Cal. Code Regs. tit. 27, § 20210 is defined at Cal. Water Code § 13173. Under Cal. Water Code § 13173, designated waste is hazardous waste that has been granted a variance from hazardous waste management requirements or nonhazardous waste that consists of or contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state.

A nonhazardous solid waste under Cal. Code Regs. tit. 27, § 20220 is all putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid wastes, and other discarded waste (whether of solid or semisolid consistency), provided that such wastes do not contain wastes that must be managed as hazardous wastes or wastes that contain soluble pollutants in concentrations that exceed applicable water quality objectives or could cause degradation of waters of the state.

Under Cal. Code Regs. tit. 27, § 20230, inert waste is that subset of solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives and does not contain significant quantities of decomposable waste.

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Section B2
CHEMICAL-SPECIFIC ARARs

Chemical-specific ARARs are generally health- or risk-based numerical values or methodologies applied to site-specific conditions that result in the establishment of a cleanup level. Many potential ARARs associated with particular remedial alternatives (such as closure or discharge) can be characterized as action-specific but include numerical values or methodologies to establish them so they fit in both categories (chemical- and action-specific).

This section presents ARARs determination conclusions addressing numerical values for groundwater and a summary of the ARARs conclusions and a more detailed discussion of the ARARs for groundwater.

Potential federal and state chemical-specific ARARs are summarized in Tables B2-1 and B2-2, respectively, which are at the end of this section.

B2.1 SUMMARY OF ARARs CONCLUSIONS BY MEDIUM

Groundwater is the environmental medium potentially affected by the Site 1 remedial alternatives. The conclusions for ARARs pertaining to this medium are presented in the following sections.

B2.1.1 Groundwater ARARs Conclusions

The substantive provisions of the following requirements are the most stringent of the potential federal and state chemical-specific ARARs and TBCs for remediation of Site 1 groundwater:

- Basin Plan (RWQCB 1994)
- Cal. Water Code, div. 7, §§ 13304, 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Act)
- Waste Discharge Requirements, RWQCB Order No. R7-2002-0168

B2.1.2 Surface Water ARARs Conclusions

Surface water is not present at Site 1. Surface water from field irrigation is present approximately 1,000 feet west of Site 1. The closest permanent surface water is located approximately 1 mile west of Site 1 (New River). The existing multilayer cover prevents surface water infiltration resulting from precipitation from contacting the landfill material. In addition, reduced irrigation in the vicinity of Site 1 has caused the groundwater elevation to drop below the base of the landfill material and the drainage ditch located adjacent to the north side of Site 1. Since surface water is not present in the vicinity of Site 1, and remedial alternatives are designed to reduce irrigation of the fields around Site 1 to prevent groundwater from rising to a level that would produce surface water in the unlined drainage ditch and contacting landfill material, there are no chemical-specific ARARs for surface water.

B2.1.3 Soil ARARs Conclusions

Soil is not a medium of concern and the proposed remedial alternatives do not address the cleanup of soils. Therefore, there are no chemical-specific ARARs for soil.

B2.1.4 Sediment ARARs Conclusions

Sediment is not a medium of concern and the proposed remedial alternatives do not address the cleanup of sediments. Therefore, there are no chemical-specific ARARs for sediment.

B2.1.5 Air ARARs Conclusions

Air is not a medium of concern and the proposed remedial alternatives do not address the cleanup of air. Therefore, there are no chemical-specific ARARs for air.

B2.2 DETAILED DISCUSSION OF ARARs BY MEDIUM

The following subsections provide a detailed discussion of federal and state ARARs by medium.

B2.2.1 Groundwater ARARs

Shallow groundwater at NAF El Centro is part of the Imperial Hydrogeologic Unit. Beneficial groundwater uses for the Imperial Hydrogeologic Unit listed in the Basin Plan includes municipal and industrial use. However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria provided in SWRCB Res. 88-63 (SWRCB 1988) for beneficial use because of the high salinity and low aquifer yields. These criteria include total dissolved solids (TDS) not to exceed 3,000 mg/L and capability to produce an average sustained yield of 200 gallons per day (RWQCB 1994). In a letter dated 30 June 1998, RWQCB stated that the upper aquifer at NAF El Centro currently has no known beneficial use due to low aquifer yield and poor quality of the groundwater (TDS commonly in excess of 3,000 mg/L) (Stormo, pers. com. 1998).

Reported mineral concentrations in groundwater samples collected from NAF El Centro monitoring wells generally exceeded California secondary maximum contaminant levels (MCLs) and U.S. EPA secondary MCLs. Reported chloride, sulfate, and TDS concentrations, indicative of the saline nature of the groundwater, exceeded MCLs in groundwater samples collected from most monitoring wells. Based upon typical reported concentrations of chloride, sulfate, and TDS, groundwater at NAF El Centro is not of sufficient quality for municipal uses without prior treatment.

B2.2.1.1 FEDERAL

One of the significant issues in identifying ARARs for groundwater under the Safe Drinking Water Act (SDWA) and RCRA is whether the groundwater at the site can be classified as a source of drinking water. U.S. EPA groundwater policy is set forth in the preamble to the NCP (55 Fed. Reg. 8666, 8752–8756 [1990]). This policy uses the

groundwater classification system set forth in the draft U.S. EPA Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy (U.S. EPA 1986). Under this policy, groundwater is classified in one of three categories (Class I, II, or III), based on ecological importance, replaceability, and vulnerability considerations. Irreplaceable groundwater that is currently used by a substantial population or groundwater that supports a vital habitat is considered to be Class I. Class II consists of groundwater that is currently being used or that might be used as a source of drinking water in the future. Groundwater that cannot be used for drinking water due to insufficient quality (e.g., high salinity or widespread, naturally occurring contamination) or quantity is considered to be Class III. The U.S. EPA guidelines define Class III groundwater as groundwater with TDS concentrations over 10,000 mg/L and a yield of less than 150 gallons per day (U.S. EPA 1986). Class III groundwater can also be classified based on economic or technological treatability tests as well as quality or quantity (both criteria are not needed, just one or the other).

Groundwater in the vicinity of El Centro is classified as Class II. However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for beneficial use because of the high salinity and low aquifer yields (Stormo, pers. com. 1998, Attachment A to this appendix) and, therefore, meets the criteria for Class III. The evaluation of ARARs for Site 1 is based on this determination.

Safe Drinking Water Act

Under the SDWA, MCLs are potentially relevant and appropriate requirements for aquifers with Class I and Class II characteristics and, therefore, are potential federal ARARs. Because groundwater does not meet the criteria for a potential source of drinking water, MCLs are neither applicable nor relevant and appropriate and are not used to determine preliminary response action goals (U.S. EPA 1988a; 55 Fed. Reg. 8666, 8750–8754 [1990]).

RCRA Hazardous Waste

The federal RCRA requirements at 40 C.F.R. pt. 261 do not apply in California because the state RCRA program is authorized. The authorized state RCRA requirements are therefore considered potential federal ARARs (see Section B1.3.1). The applicability of RCRA requirements depends on whether the waste is an RCRA hazardous waste, whether the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement, and whether the activity at the site constitutes treatment, storage, or disposal as defined by RCRA. However, RCRA requirements may be relevant and appropriate even if they are not applicable. Examples include activities that are similar to the definition of RCRA treatment, storage, or disposal for waste that is similar to RCRA hazardous waste.

The determination of whether a waste is an RCRA hazardous waste can be made by comparing the site waste to the definition of RCRA hazardous waste. The RCRA requirements at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are potential ARARs because they define RCRA

hazardous waste. A waste can meet the definition of hazardous waste if it has the toxicity characteristic of hazardous waste. This determination is made by using the TCLP. The maximum concentrations allowable for the TCLP listed in § 66261.24(a)(1)(B) are potential federal ARARs for determining whether the site has hazardous waste. If the site waste has concentrations exceeding these values, it is determined to be a characteristic RCRA hazardous waste (see Section B1.4.1).

RCRA Groundwater Protection Standards

Groundwater concentration limits for RCRA-regulated units are promulgated at Cal. Code Regs. tit. 22, § 66264.94. For corrective action programs, Cal. Code Regs. tit. 22, § 66264.94(c) states that the concentrations of compounds must not exceed the background level of that constituent in groundwater or, if achieving background is shown to be technologically or economically infeasible, some higher concentration limit that is set as part of the corrective action program. In no event shall a concentration limit greater than background exceed MCLs established under the federal SDWA (Cal. Code Regs. tit. 22, §§ 64431 and 64444).

These standards are not "applicable" because Site 1 does not contain a RCRA waste management unit, and the wastes being addressed by the Site 1 actions are not classified as RCRA hazardous wastes. In addition, since the Site 1 landfill is regulated under Waste Discharge Requirements (WDRs) of the RWQCB (Order No. R7-2002-0168) as a "nonhazardous" landfill, RCRA requirements are not relevant or appropriate for Site 1. WDRs for Site 1 are included as Appendix A of the Site 1 FS.

CERCLA Alternative Concentration Levels

Under CERCLA 121(d)(2)(B)(ii) (42 U.S.C. § 9621[d][2][B][ii]), an alternative concentration limit (ACL) using a point of exposure (akin to a point of compliance [POC]) beyond the facility boundary can be used where:

- there are known and projected points of entry of such groundwater into surface water,
- there will be no statistically significant increase of hazardous constituents from groundwater in surface water at the point of entry or at any point where there is reason to believe accumulation of constituents may occur downstream, and
- there are enforceable institutional controls to preclude human exposure at any point between the facility boundary and the point of entry into surface water.

There is currently no surface water present in the area surrounding Site 1. In addition, remedial alternatives have been developed to reduce irrigation of a field adjacent to Site 1 to prevent groundwater from rising to a level that would produce surface water in the unlined drainage ditch adjacent to the north side of Site 1, and from coming into contact with the landfill material. Therefore, exposure-based CERCLA ACLs are not ARARs for Site 1.

Table B2-2 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Incorporated into all regional board basin plans. Designates all groundwater and surface waters of the state as drinking water except where the TDS is greater than 3,000 ppm, the well yield is less than 200 gpd from a single well, the water is a geothermal resource or in a water conveyance facility, or the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.		SWRCB Res. 88-63 (Sources of Drinking Water Policy) (SWRCB 1988)	Not an ARAR	The groundwater at Site 1 does not meet the criteria for a drinking water source.
Sets concentration limits established for constituents of concern for monitoring points and identifies points of compliance.	Waste discharge requirements for NAF El Centro	RWQCB Order No. R7-2002-0168 (Waste Discharge Requirements)	Applicable	The substantive provisions of the WDRs pertinent to the proposed groundwater remedial action are potentially applicable ARARs.
Establishes concentration limits for cleanup actions, including groundwater, surface water, and the unsaturated zones for other than hazardous waste at background. Allows a higher cleanup limit (but not to exceed MCLs) if background is not technically or economically achievable.		Cal. Code Regs. tit. 27, §§ 20380(a); 20400(a), (c), (d), (e), and (g); and 20405	Not an ARAR	Not more stringent than federal regulations at Cal. Code Regs. tit. 22, § 66264.94. See Section A2.2.1.2 for additional discussion.

Notes:

[a] many potential action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables

[b] only the substantive provisions of the requirements cited in this Table Bre potential ARARs

[c] statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of specific citations are considered potential ARARs

(table continues)

Table B2-2 (continued)

Acronyms/Abbreviations:
ARAR – applicable or relevant and appropriate requirement
Cal. Code Regs. – *California Code of Regulations*
Cal-EPA – California Environmental Protection Agency
Cal. Water Code – California Water Code
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
div. – division
DON – Department of the Navy
gpd – gallons per day
MCL – maximum contaminant level
NAF – Naval Air Facility
NPDES – National Pollutant Discharge Elimination System
ppm – parts per million
RCRA – Resource Conservation and Recovery Act
Res. – Resolution
RWQCB – (California) Regional Water Quality Control Board
§ – section
SWRCB – (California) State Water Resources Control Board
TDS – total dissolved solids
tit. – title
WQO – water quality objective

Section B4
ACTION-SPECIFIC ARARs

Potential action-specific ARARs, based on the four remedial action alternatives retained for detailed analysis for Site 1, are identified and discussed in this section. Alternative 1 involves no action, Alternative 2 consists of continued groundwater monitoring; Alternative 3 entails continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect the landfill cap; and Alternative 4 entails continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect the landfill cap. Detailed descriptions of the remedial alternatives are provided in the main text of this FS.

Tables B4-1 and B4-2 at the end of this section present and evaluate federal and state potential action-specific ARARs for Site 1, respectively. A discussion of the requirements determined to be pertinent to each alternative being evaluated for Site 1 action is presented in this section. A discussion of how the alternative complies with each identified ARAR is also provided.

B4.1 ALTERNATIVE 1 – NO ACTION

There is no need to identify ARARs for the no action alternative because ARARs apply to "any removal or remedial action conducted entirely on-site" and "no action" is not a removal or remedial action (CERCLA Section 121(e), 42 U.S.C. § 9621[e]). CERCLA § 121 (42 U.S.C. § 9621) cleanup standards for selection of a Superfund remedy, including the requirement to meet ARARs, are not triggered by the no action alternative (U.S. EPA 1991b). Therefore, a discussion of compliance with action-specific ARARs is not appropriate for this alternative.

B4.2 ALTERNATIVE 2 – CONTINUED GROUNDWATER MONITORING

A long-term groundwater monitoring and reporting program was instituted for this site in March 1999. This program will remain in place under this alternative.

B4.2.1 Federal – RCRA Hazardous Waste Requirements

Federal laws that give rise to potential ARARs for this proposed remedial alternative include the following RCRA hazardous waste requirements.

Site 1 is not classified as a hazardous waste landfill because there is no record of hazardous waste disposal. In addition, proposed remedial alternatives would not constitute placement or disposal under RCRA and, therefore, the generator and accumulation requirements for hazardous waste contained in Cal. Code Regs. tit. 22, §§ 66262.10(a), 66262.11, and 66264.13(a) and (b) are not triggered and not directly applicable. However, in the event that a hazardous waste is generated during implementation of the proposed remedial alternatives (e.g., wastewater from groundwater monitoring well sampling), the DON intends to comply with these requirements; therefore, they have been identified as potentially applicable.

B4.2.2 State ARARs

The following sections evaluate the potential state ARARs for continued groundwater monitoring.

B4.2.2.1 COMPREHENSIVE WATER QUALITY CONTROL PLAN FOR THE COLORADO RIVER BASIN

The pertinent substantive provisions of the Comprehensive Water Quality Control Plan for the Colorado River Basin (Basin Plan) (RWQCB 1994) are potentially applicable state action-specific ARARs for this proposed remedial alternative. The DON accepts the substantive provisions of the Basin Plan that address beneficial use, WQOs, and waste discharge requirements as potential ARARs. The beneficial uses designated for the Colorado River Basin are potential ARARs for this FS. The alternative would comply with RWQCB requirements to maintain beneficial uses and meet water quality objectives for the shallow groundwater system underlying NAF El Centro.

Shallow groundwater at NAF El Centro is part of the Imperial Hydrogeologic Unit. Beneficial groundwater uses for the Imperial Hydrogeologic Unit listed in the Basin Plan include municipal and industrial usage. However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria provided in SWRCB Res. 88-63 for a potential source of drinking water because of the high salinity and low aquifer yields. In a letter dated 30 June 1998, RWQCB stated that the upper aquifer at NAF El Centro currently has no known beneficial use due to low aquifer yield and poor quality of the groundwater (TDS commonly in excess of 3,000 mg/L) (Stormo, pers. com. 1998). In addition, the RWQCB has issued WDRs for the site in compliance with the Basin Plan and have determined that the groundwater beneath the site is not a source of drinking water.

B4.2.2.2 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD ORDER NO. R7-2002-0168

RWQCB Order No. R7-2002-0168 (RWQCB 2002) sets forth the Waste Discharge Requirements for the Site 1 landfill at NAF El Centro and has been identified as a potentially applicable ARAR. Pursuant to Specification No. 6 of Order No. R7-2002-0168, NAF El Centro is required to implement the Monitoring and Reporting Program No. 99-010 (RWQCB 1999b). The substantive requirements of Order No. R7-2002-0168 pertinent to groundwater have hence been identified as potentially applicable to this proposed remedial alternative. The WDRs included in the order have been developed in compliance with all the state requirements identified as potential ARARs for the proposed remedial actions. WDRs for Site 1 are included in Appendix A.

Currently, physical conditions at Site 1 comply with WDRs. Surface water is not present in the vicinity of Site 1 and the current groundwater elevation is being maintained below the base of the landfill material and the unlined drainage ditch on the north side of the site through irrigation restrictions. However, Alternative 2 does not include continuation of irrigation restrictions or other measures to maintain water levels below the base of the landfill. A potential rise in groundwater levels sufficient to allow groundwater to come

in contact with landfill wastes and leach additional contaminants may cause water quality to exceed the WDRs (and cause RAOs not to be achieved). Lining the drainage ditch is an additional measure that would prevent surface water in the ditch from infiltrating landfill wastes and entering groundwater, and would eliminate a potential migration pathway. Continuing irrigation restrictions on adjacent lands and lining the drainage ditch are evaluated as part of the other remedial alternatives proposed.

B4.2.2.3 TITLE 27 OF THE CALIFORNIA CODE OF REGULATIONS

This FS is limited to addressing the groundwater aspects of the landfill that were not addressed in the AM/RAW, therefore, the Cal. Code Regs. tit. 27 sections that address groundwater monitoring are included in this ARARs evaluation.

The detection monitoring requirements found in Cal Code Regs. tit. 27, § 20385(a)(1) and (a)(2) apply to discharges of waste to land after 18 July 1997. Section 20420 provides the minimum requirements for a detection monitoring program. These monitoring requirements are for the detection of potential contaminants that may lead to further evaluation and corrective action monitoring. The substantive provisions of these requirements pertinent to groundwater monitoring are potentially applicable ARARs for the proposed remedial actions, including groundwater monitoring. These requirements are included in the WDRs for the landfill at Site 1 (Order No. R7-2002-0168).

B4.3 ALTERNATIVE 3 – CONTINUED GROUNDWATER MONITORING, RESTRICTIONS ON FIELD IRRIGATION, AND RESTRICTIONS TO PROTECT THE LANDFILL CAP

Restrictions on irrigation near the site would be used to maintain groundwater levels below the bottom of landfill waste and below the bottom of the unlined drainage ditch. Historical groundwater elevation monitoring (Section 1.2.3 of the FS) has demonstrated that such restrictions are effective at controlling site groundwater levels. Land-use restrictions to maintain the integrity of the landfill cap and monitoring system would be used to protect the remedy. The restrictions will be incorporated into the Base Master Plan (BMP). A long-term groundwater monitoring and reporting program was instituted for this site in March 1999. This program will remain in place under this alternative.

B4.3.1 Federal ARARs

Federal laws that give rise to potential ARARs for this proposed remedial alternative include the following RCRA hazardous waste requirements. No federal ARARs were identified for the restriction of irrigation on surround lands or other such institutional controls for open military bases where the property will not be transferred to non-federal ownership. However, DON has agreed to the use of institutional control protocols for active bases developed jointly with Cal/EPA, U.S. EPA for sites that require institutional controls as part of their CERCLA response action.

B4.3.1.1 RCRA HAZARDOUS WASTE REQUIREMENTS

Site 1 is not classified as a hazardous waste landfill because there is no record of hazardous waste disposal. In addition, proposed remedial alternatives would not constitute placement or disposal under RCRA and, therefore, the generator and accumulation requirements for hazardous waste contained in Cal. Code Regs. tit. 22, §§ 66262.10(a), 66262.11, and 66264.13(a) and (b) are not triggered and not directly applicable. However, in the event that a hazardous waste is generated during implementation of the proposed remedial alternatives (such as wastewater from groundwater monitoring well sampling), the DON intends to comply with these requirements; therefore, they have been identified as potentially applicable.

B4.3.1.2 INSTITUTIONAL CONTROLS FOR OPEN BASES

The land-use restrictions proposed for the landfill cap and monitoring system as a part of this remedial alternative are a form of institutional control. The California Military Environmental Coordination Committee (CMECC), made up of Cal/EPA, U.S. EPA, and the DON, has developed the Institutional Control Protocol at Open Bases (Attachment B) for application at active military installations. This protocol is a consensus document that is intended to aid federal and state remedial project managers when incorporating institutional controls into CERCLA response actions. The DON has agreed that the institutional control protocol for active bases should be followed for sites that require institutional controls as part of their CERCLA response action. Therefore, the Institutional Control Protocol at Open Bases may be a TBC guidance for sites that require institutional controls, including Site 1.

The Institutional Control Protocol at Open Bases states that the BMP is typically the best place to record the institutional controls so as to assure their implementation by the Department of Defense (DoD) installation. The BMP establishes land uses for the DoD installation and requirements similar to zoning. The BMP is used by the installation for evaluating land-use decisions and for project planning. Depending on the installation project planning and project approval process, other documents or more than one document may be required to include the institutional controls to assure adherence to the institutional controls.

B4.3.2 State ARARs

The following sections evaluate the potential state ARARs for continued groundwater monitoring, restricting irrigation near the landfill and restrictions to protect the integrity of the landfill cap. No state requirements have been identified for land use restrictions on open military bases if ownership of the property will not be transferred. The irrigation restrictions and restrictions to protect the landfill cap will be included in an amendment to the BMP.

B4.3.2.1 COMPREHENSIVE WATER QUALITY CONTROL PLAN FOR THE COLORADO RIVER BASIN

The pertinent substantive provisions of the Basin Plan are potentially applicable state action-specific ARARs for this proposed remedial alternative. The DON accepts the substantive provisions of the Basin Plan that address beneficial use, WQOs, and waste discharge requirements as potential ARARs. The beneficial uses designated for the Colorado River Basin are potential ARARs for this FS. The alternative would comply with RWQCB requirements to maintain beneficial uses and meet water quality objectives for the shallow groundwater system underlying NAF El Centro.

Shallow groundwater at NAF El Centro is part of the Imperial Hydrogeologic Unit. Beneficial groundwater uses for the Imperial Hydrogeologic Unit listed in the Basin Plan include municipal and industrial usage. However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria provided in SWRCB Res. 88-63 for a potential source of drinking water because of the high salinity and low aquifer yields. In a letter dated 30 June 1998, RWQCB stated that the upper aquifer at NAF El Centro currently has no known beneficial use due to low aquifer yield and poor quality of the groundwater (TDS commonly in excess of 3,000 mg/L) (Stormo, pers. com. 1998). In addition, the RWQCB has issued WDRs for the site in compliance with the Basin Plan and have determined that the groundwater beneath the site is not a source of drinking water.

B4.3.2.2 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD ORDER NO. R7-2002-0168

RWQCB Order No. R7-2002-0168 sets forth the Waste Discharge Requirements for the Site 1 landfill at NAF El Centro and has been identified as a potentially applicable ARAR. Pursuant to Specification No. 6 of Order No. R7-2002-0168, NAF El Centro is required to implement the Monitoring and Reporting Program No. R7-2002-0168. The substantive requirements of Order No. R7-2002-0168 pertinent to groundwater have hence been identified as potentially applicable to this proposed remedial alternative. The WDRs included in the order have been developed in compliance with all the state requirements identified as potential ARARs for the proposed remedial actions. WDRs for Site 1 are included in Appendix A.

B4.3.2.3 TITLE 27 OF THE CALIFORNIA CODE OF REGULATIONS

This FS is limited to addressing the groundwater aspects of the landfill that were not addressed in the AM/RAW, therefore, the Cal. Code Regs. tit. 27 sections that address groundwater monitoring are included in this ARARs evaluation.

The detection monitoring requirements found in Cal Code Regs. tit. 27, § 20385(a)(1) and (a)(2) apply to discharges of waste to land after 18 July 1997. Section 20420 provides the minimum requirements for a detection monitoring program. These monitoring requirements are for the detection of potential contaminants that may lead to further evaluation and corrective action monitoring. The substantive provisions of these requirements pertinent to groundwater monitoring are potentially applicable ARARs for

the proposed remedial actions, including groundwater monitoring. These requirements are included in the WDRs for the landfill at Site 1 (Order No. R7-2002-0168).

B4.4 ALTERNATIVE 4 – CONTINUED GROUNDWATER MONITORING, DITCH LINING, RESTRICTIONS ON FIELD IRRIGATION, AND RESTRICTIONS TO PROTECT THE LANDFILL CAP

Components of Alternative 4 that trigger ARARs are groundwater monitoring and lining of the ditch. No ARARs were identified for the irrigation restrictions. Land-use restrictions to protect integrity of the landfill cap and monitoring system used to protect the remedy would be implemented in accordance with CMECC protocols for institutional controls at open bases, as TBC guidance. Restrictions on field irrigation near the site would be used to maintain groundwater levels below the bottom of the landfill waste and below the bottom of the unlined drainage ditch. Historical groundwater elevation monitoring (Section 1.2.3 of the FS) has demonstrated that such restrictions are effective at controlling site groundwater levels. Lining of the drainage ditch north of the site would eliminate a potential migration pathway between contaminated groundwater and surface water. This pathway would only be completed if groundwater levels were increased to the level of the bottom of the drainage ditch. The lining would also prevent surface water from the ditch from permeating the groundwater table. A long-term groundwater monitoring and reporting program was instituted for this site in March 1999. This program will remain in place under this alternative.

ARARs associated with ditch lining are limited to federal RCRA requirements for the generation of hazardous wastes (i.e., waste soil) as identified for Alternative 3.

Lining of the ditch may generate dust and Imperial County Air Pollution Control District (ICAPCD) requirements are potentially applicable ARARs.

ICAPCD Rules 216, 401, and 403 were evaluated as potential state ARARs for the potential air emissions at Site 1. These are not potential federal ARARs because they are not included in the State Implementation Plan.

ICAPCD Rule 216, "Construction or Reconstruction of Major Stationary Sources that Emit Hazardous Air Pollutants," states that owners and operators of stationary sources that emit hazardous air pollutants must install best available control technology for toxics to any constructed or reconstructed major source. These requirements apply to emissions of hazardous air pollutants from construction or reconstruction of major stationary sources. Because the proposed remedial alternative does not involve a major stationary source, but the activities are similar to those addressed in the requirement, this ARAR has been identified as potentially relevant and appropriate.

ICAPCD Rule 401, "Opacity of Emissions," prohibits the release or discharge into the atmosphere, from any single source of emission whatsoever, any air contaminant that meets the specifications set forth in the regulation other than uncombined water vapor, for a period or periods aggregating more than 3 minutes in any hour. This requirement applies to the discharge of any pollutant, and has also been identified as potentially applicable to the proposed remedial alternatives at Site 1.

Finally, ICAPCD Rule 403, "General Limitations on the Discharge of Air Contaminants," sets forth discharge limitations from any single emissions unit for particulate matter. This requirement has also been identified as potentially applicable.

Table B4-1
Potential Federal Action-Specific ARARs

2 – Continued groundwater monitoring; 3 – Continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect landfill cap; 4 – Continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect landfill cap.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	RA	TBC	Comments
Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[i])*							
On-site waste generation	Person who generates waste shall determine if that waste is a hazardous waste.	Generator of waste.	Cal. Code Regs. tit. 22, § 66262.10(a), 66262.11	2, 3, 4			It is not anticipated that solid waste will be generated as a result of the proposed remedial alternatives. However, in the event that it is, the substantive requirements of the cited sections would be applicable for waste characterization.
	Requirements for analyzing waste for determining whether waste is hazardous.	Generator of waste.	Cal. Code Regs. tit. 22, § 66264.13(a) and (b)	2, 3, 4			It is not anticipated that solid waste will be generated as a result of the proposed remedial alternatives. However, in the event that it is, the substantive requirements of the cited sections would be applicable for waste characterization.
California Military Environmental Coordination Committee							
Institutional controls	Protocols for implementing institutional controls on open DoD installations.	Controls are necessary to protect human health or the environment. Unrestricted land use is not achieved.	Institutional Control Protocol at Open Bases			3, 4	Protocols of this guidance are potentially TBC for implementing land-use restrictions to maintain the integrity of the landfill cap and monitoring system necessary to protect the remedial action at IR Site 1.
Clean Air Act (42 U.S.C. §§ 7401–7671)*							
Discharge to air	Provisions of SIP approved by U.S. EPA under Section 110 of CAA.	Major sources of air pollutants.	40 U.S.C. § 7410; portions of 40 C.F.R. § 52.220	4			Not an ARAR. Substantive requirements of Imperial Valley APCD rules that have been approved by U.S. EPA as part of the SIP under the CAA are potential federal ARARs for air emissions (CAA Section 110). However, the remedial actions proposed for the site do not have the potential for emissions addressed by the regulations.

(table continues)

Table B4-1 (continued)

Note:

* statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of specific citations are considered potential ARARs

Acronyms/Abbreviations:

A – applicable
APCD – Air Pollution Control District
ARAR – applicable or relevant and appropriate requirement
CAA – Clean Air Act
Cal. Code Regs. – *California Code of Regulations*
C.F.R. – *Code of Federal Regulations*
DoD – Department of Defense
DON – Department of the Navy
IR – Installation Restoration (Program)
RA – relevant and appropriate
§ – section
SIP – State Implementation Plan
TBC – to be considered
tit. – title
U.S.C. – *United States Code*
U.S. EPA – United States Environmental Protection Agency

Table B4-2
Potential State Action-Specific ARARs

2 – Continued groundwater monitoring; 3 – Continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect the landfill cap; 4 – Continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect the landfill cap.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	RA	TBC	Comments
State Water Resources Control Board and Regional Water Quality Control Board*							
Actions affecting water quality	Authorizes the SWRCB and RWQCB to establish in Water Quality Control Plans beneficial uses and numerical and narrative standards to protect both surface water and groundwater quality. Authorizes regional water boards to issue permits for discharges to land or surface water or groundwater that could affect water quality, including NPDES permits, and to take enforcement action to protect water quality.		Cal. Water Code, div. 7, §§ 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Act); other provisions are not ARARs	2, 3, 4			Substantive provisions of §§ 13241, 13243, 13263(a), 13269, and 13360 as implemented through the beneficial uses, water quality objectives, and waste discharge requirements of the Basin Plan are ARARs for this action. This includes substantive requirements contained in permits, but not the permits themselves.
	Describes the water basins in the Colorado River Basin, establishes beneficial uses of surface water and groundwater, establishes water quality objectives, including narrative and numerical standards, establishes implementation plans to meet water quality objectives and protect beneficial uses, and incorporates statewide water quality control plans and policies.		Basin Plan	2, 3, 4			The substantive requirements pertaining to beneficial uses, water quality objectives, and certain statewide water quality control plans are potential state ARARs for the groundwater components of the proposed remedial alternatives for NAF El Centro.

(table continues)

Table B4-2 (continued)

2 – Continued groundwater monitoring; 3 – Continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect the landfill cap; 4 – Continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect the landfill cap.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	RA	TBC	Comments
Discharges to high-quality waters	Incorporated into all Regional Board Basin Plans. Requires that quality of waters of the state that is better than needed to protect all beneficial uses be maintained unless certain findings are made. Discharges to high quality waters must be treated using best practicable treatment or control necessary to prevent pollution or nuisance and to maintain the highest quality water. Requires cleanup to background water quality or to lowest concentrations technically and economically feasible to achieve. Beneficial uses must, at least, be protected.		SWRCB Res. 68-16 (Policy With Respect to Maintaining High Quality of Waters in California) (Cal. Water Code § 13140, CWA regulations 40 C.F.R. § 131.12)				Not an ARAR. Discharge to groundwater is not part of the remedial alternatives. Monitoring in accordance with the WDRs (Order No. R7-2002-0168) has not resulted in discharges from the site.
Actions affecting water quality	Provides water quality criteria for classifying the beneficial use of groundwater as municipal/domestic. Criteria outlined as follows: total dissolved solids ≤ 3,000 mg/L or yielding 200 gallons per day or serving as a public water system.	Applies in determining beneficial uses for waters that may be affected by discharges of waste.	SWRCB Res. 88-63 ("Sources of Drinking Water Policy") (as contained in the Basin Plans)				Not an ARAR. The groundwater at the site does not meet the criteria for a potential source of drinking water. In addition, there are no surface water drinking water sources that could be impacted by proposed remedial alternatives.
	Establishes policies and procedures for the oversight of investigations and cleanup and abatement activities resulting from discharges of waste which affect or threaten water quality. Requires cleanup of all waste discharged and restoration of affected water to background conditions. Requires actions for cleanup and abatement to conform to Res. 68-16 and applicable provisions of Cal. Code Regs. tit. 23, div. 3, ch. 15 as feasible.	Cleanup and discharge of groundwater to groundwater or surface water and establishment of containment zones.	SWRCB Res. 92-49 (Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Cal. Water Code § 13304) (Cal. Water Code § 13307) (02 October 1996)				Not an ARAR. Monitoring conducted in compliance with the WDRs for the site (Order No. R7-2002-0168) have not resulted in discharges that require cleanup or abatement.

(table continues)

Table B4-2 (continued)

2 – Continued groundwater monitoring; 3 – Continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect the landfill cap; 4 – Continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect the landfill cap.

Action	Requirement	Prerequisites	Citation	ARAR Determination			Comments
				A	RA	TBC	
Waste discharge requirements	Sets concentration limits established for constituents of concern for monitoring points and identifies points of compliance.	Waste discharge requirements for NAF El Centro.	Waste Discharge Requirements, Colorado River Basin RWQCB Order No. R7-2002-0168	2,3,4			Substantive provisions of the WDRs pertinent to the proposed remedial actions are potentially applicable ARARs.
Discharge to surface waters	Establishes numerical water quality objectives for the protection of human health and freshwater aquatic life for a large number of toxic pollutants. It also establishes narrative objectives and toxicity objectives. It provides a program of implementation and specifies proposals to adopt numerical standards for water bodies that are dominated by reclaimed water and agricultural drainage.	Discharge to surface waters, enclosed bays, and estuaries.	Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. (Phase 1 of the Inland Surface Waters Plan and the Enclosed Bays and Estuaries Plan)				Not an ARAR. Discharge to surface waters, enclosed bays, and estuaries is not part of the remedial alternatives.
Monitoring	Requires detection monitoring. Once a significant release has occurred, evaluation or corrective action monitoring is required.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20385(a)(1) and (a)(2)	2,3,4			The substantive requirements have been identified as potentially applicable. These requirements have been included in the WDRs for the landfill (Order No. R7-2002-0168).
Groundwater monitoring	Provides minimum requirements for a groundwater detection monitoring program.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20420	2,3, 4			The substantive requirements have been identified as potentially applicable. These requirements have been included in the WDRs for the landfill (Order No. R7-2002-0168).

(table continues)

Table B4-2 (continued)

2 – Continued groundwater monitoring; 3 – Continued groundwater monitoring, restrictions on field irrigation, and restrictions to protect the landfill cap; 4 – Continued groundwater monitoring, ditch lining, restrictions on field irrigation, and restrictions to protect the landfill cap.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	ARAR Determination RA	ARAR Determination TBC	Comments
Monitoring	Maintain monitoring systems and monitor groundwater, surface water, and the unsaturated zone in accordance with applicable requirements of Article 1, Subchapter 3, Chapter 3, Subdivision 1 (Section 20380 et seq.)		Cal. Code Regs. tit. 27, § 21090(c)(3)	2,3,4			The substantive provisions that address groundwater monitoring are potentially applicable for the proposed remedial alternatives. These requirements are included in the WDRs for the landfill (Order No. R7-2002-0168).
Air Quality Management District/Air Pollution Control District*							
Air emission	Owners and operators of stationary sources that emit hazardous air pollutants to install best available control technology for toxics to any constructed or reconstructed major source.	Emission of hazardous air pollutants from construction or reconstruction of stationary sources.	Imperial County Rule 216, "Construction or Reconstruction of Major Stationary Sources that Emit Hazardous Air Pollutants"		2,3,4		The proposed remedial alternatives do not involve the construction or reconstruction of a major stationary source. However, the substantive requirements are potentially relevant and appropriate for proposed remedial alternatives at NAF El Centro.
	Prohibits the release or discharge into the atmosphere from any single source of emission whatsoever, any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than 3 minutes in any hour that meets the specifications set forth in the regulation.	Discharge of pollutants.	Imperial County Rule 401, "Opacity of Emissions"	2,3,4			Though not anticipated, in the event that emissions are released from proposed remedial alternatives, the substantive requirements are potentially applicable.
	Sets forth discharge limitations from any single emissions unit for particulate matter (Table 403-1) and air contaminants (Table 403-2).	Discharge of air contaminants and particulate matter into the atmosphere.	Imperial County Rule 403, "General Limitations on the Discharge of Air Contaminants"		2,3,4		The substantive requirements are relevant and appropriate to proposed remedial alternatives.

(table continues)

Table B4-2 (continued)

Note:

* statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of the specific actions are considered potential ARARs.

Acronyms/Abbreviations:

A – applicable
ARAR – applicable or relevant and appropriate requirement
Cal. Code Regs. – *California Code of Regulations*
Cal. Water Code – *California Water Code*
C.F.R. – *Code of Federal Regulations*
ch. – chapter
CWA – Clean Water Act
div. – division
DON – Department of the Navy
mg/L – micrograms per liter
NAF – Naval Air Facility
NPDES – National Pollutant Discharge Elimination System
RA – relevant and appropriate
Res. – resolution
RWQCB – Regional Water Quality Control Board Colorado River Basin Region
§ – section
SWRCB – (California) State Water Resources Control Board
TBC – to be considered
tit. – title
WDR – waste discharge requirement

Section B5
REFERENCES

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U.S. EPA. *See* United States Environmental Protection Agency.

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B3 LOCATION-SPECIFIC ARARs

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ACRONYMS/ABBREVIATIONS

ACL	alternative concentration limit
AM/RAW	action memorandum/remedial action work plan
APCD	Air Pollution Control District
ARAR	applicable or relevant and appropriate requirement
Basin Plan	Comprehensive Water Quality Control Plan for Colorado River Basin
BAT	best available technology
BCPCT	best conventional pollutant control technology
Cal. Code Regs.	*California Code of Regulations*
Cal/EPA	California Environmental Protection Agency
Cal. Fish & Game Code	California Fish and Game Code
Cal. Pub. Res. Code	California Public Resources Code
Cal. Water Code	California Water Code
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	*Code of Federal Regulations*
ch.	chapter
CIWMB	California Integrated Waste Management Board
COC	chemical of concern
CTR	California Toxics Rule
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
div.	division
DOI	(United States) Department of the Interior
DON	Department of the Navy
DTSC	(Cal-EPA) Department of Toxic Substances Control
ESA	Endangered Species Act
Exec. Order No.	Executive Order Number
FAWQC	Federal Ambient Water Quality Criteria
Fed. Reg.	*Federal Register*
FS	feasibility study
gpd	gallons per day
HSWA	Hazardous and Solid Waste Amendments
ICAPCD	Imperial County Air Pollution Control District
IR	Installation Restoration (Program)
LDR	land disposal restriction

MCL	maximum contaminant level
MCLG	maximum contaminant level goal
mg/L	milligrams per liter
NAAQS	National Ambient Air Quality Standards
NAF	Naval Air Facility
National Register	National Register of Historic Places
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
POC	point of compliance
ppm	parts per million
Pub. L. No.	public law number
RCRA	Resource Conservation and Recovery Act
Res.	resolution
ROD	Record of Decision
RWQCB	(California) Regional Water Quality Control Board
§	section
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SMCL	secondary maximum contaminant level
STLC	soluble threshold limit concentration
SWRCB	(California) State Water Resources Control Board
TBC	to be considered
TCLP	toxicity characteristic leaching procedure
TDS	total dissolved solids
tit.	title
TTLC	total threshold limit concentration
U.S.	United States
U.S.C.	*United States Code*
U.S. EPA	United States Environmental Protection Agency
VOC	volatile organic compound
WDR	waste discharge requirement
WET	(California) Waste Extraction Test
WQO	water quality objective
WSRA	Wild and Scenic Rivers Act

Section B1
INTRODUCTION

This appendix identifies and evaluates potential federal and state of California applicable or relevant and appropriate requirements (ARARs) from the universe of regulations, requirements, and guidance and sets forth the Department of the Navy (DON) determinations regarding those potential ARARs for each remedial action alternative retained for detailed analysis in this feasibility study (FS) report for Installation Restoration (IR) Program Site 1, Naval Air Facility (NAF) El Centro, El Centro, California.

This evaluation includes an initial determination of whether the potential ARARs actually qualify as ARARs, and a comparison for stringency between the federal and state regulations to identify the controlling ARARs. The identification of ARARs is an iterative process. The final determination of ARARs will be made by the DON in the record of decision (ROD) or action memorandum (AM), after public review, as part of the remedial action selection process.

B1.1 SUMMARY OF CERCLA AND NCP REQUIREMENTS

Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 *United States Code* [U.S.C.] Section [§] 9621[d]), as amended, states that remedial actions on CERCLA sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate.

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. The requirement is applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared to the conditions at the site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than federal ARARs.

If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations similar to the circumstances of the proposed response action and are well suited to the conditions of the site (U.S. EPA 1988a). A requirement must be determined to be both relevant and appropriate in order to be considered an ARAR.

The criteria for determining relevance and appropriateness are listed in 40 *Code of Federal Regulations* (C.F.R.) § 300 400(g)(2) and include the following:

- the purpose of the requirement and the purpose of the CERCLA action
- the medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site

- the substances regulated by the requirement and the substances found at the CERCLA site
- the action or activities regulated by the requirement and the remedial action contemplated at the CERCLA site
- any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site
- the type of place regulated and the type of place affected by the release or CERCLA action
- the type and size of structure or facility regulated and the type and size of structure or facility affected by the release or contemplated by the CERCLA action
- any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resources at the CERCLA site

According to CERCLA ARARs guidance (U.S. EPA 1988a), a requirement may be "applicable" or "relevant and appropriate," but not both. Identification of ARARs must be done on a site-specific basis and involve a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is nevertheless both relevant and appropriate. It is important to explain that some regulations may be applicable or, if not applicable, may still be relevant and appropriate. When the analysis determines that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable (U.S. EPA 1988a).

Tables included in this appendix present each potential ARAR with a determination of ARAR status (i.e., applicable, relevant and appropriate, or not an ARAR). For the determination of relevance and appropriateness, the pertinent criteria were examined to determine whether the requirements addressed problems or situations sufficiently similar to the circumstances of the release or response action contemplated, and whether the requirement was well suited to the site. A negative determination of relevance and appropriateness indicates that the requirement did not meet the pertinent criteria. Negative determinations are documented in the tables of this appendix and are discussed in the text only for specific cases.

To qualify as a state ARAR under CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), a state requirement must be:

- a state standard,
- an environmental or facility siting standard,
- promulgated (of general applicability and legally enforceable),
- substantive (not procedural or administrative),
- more stringent than the federal ARAR,

- identified in a timely manner, and
- consistently applied.

To constitute an ARAR, a requirement must be substantive. Therefore, only the substantive provisions of requirements identified as ARARs in this analysis are considered to be ARARs. Permits are considered to be procedural or administrative requirements. Provisions of generally relevant federal and state statutes and regulations that were determined to be procedural or nonenvironmental, including permit requirements, are not considered to be ARARs. CERCLA 121(e)(1), 42 U.S.C. § 9621(e)(1), states that "No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on-site, where such remedial action is selected and carried out in compliance with this section." The term *on-site* is defined for purposes of this ARARs discussion as "the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action" (40 C.F.R. § 300.5).

Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. Such requirements may, however, be useful, and are "to be considered" (TBC). TBC (40 C.F.R. § 300.400[g][3]) requirements complement ARARs but do not override them. They are useful for guiding decisions regarding cleanup levels or methodologies when regulatory standards are not available.

Pursuant to United States Environmental Protection Agency (U.S. EPA) guidance (U.S. EPA 1988a), ARARs are generally divided into three categories: chemical-specific, location-specific, and action-specific requirements. This classification was developed to aid in the identification of ARARs; some ARARs do not fall precisely into one group or another. ARARs are identified on a site basis for remedial actions where CERCLA authority is the basis for cleanup.

As the lead federal agency, the DON has primary responsibility for identifying federal ARARs at NAF El Centro. Potential federal ARARs that have been identified for the Site 1 FS are discussed in Section B1.2.2. Pursuant to the definition of the term *on-site* in 40 C.F.R. § 300.5, the on-station areas that are part of this action include volatile organic compound (VOC), metals, and petroleum hydrocarbon contamination present at Site 1.

Identification of potential state ARARs was initiated through DON requests that the California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) identify potential state ARARs, an action described in more detail in Section B1.2.3. Potential state ARARs that have been identified for Site 1 are discussed below.

B1.2 METHODOLOGY DESCRIPTION

The process of identifying and evaluating potential federal and state ARARs is described in this subsection.

B1.2.1 General

As the lead federal agency, the DON has primary responsibility for identification of potential ARARs for NAF El Centro. In preparing this ARARs analysis, the DON undertook the following measures, consistent with CERCLA and the NCP:

- identified federal ARARs for each response action alternative addressed in the FS, taking into account site-specific information for Site 1
- reviewed potential state ARARs identified by the state to determine whether they satisfy CERCLA and NCP criteria that must be met in order to constitute state ARARs
- evaluated and compared federal ARARs and their state counterparts to determine whether state ARARs are more stringent than the federal ARARs or are in addition to the federally required actions
- reached a conclusion as to which federal and state ARARs are the most stringent and/or "controlling" ARARs for each alternative

As outlined in Section 2.1 of the FS Report, the remedial action objectives for Site 1 are as follows.

- Prevent the release of chemicals of concern (COCs) (as defined in the waste discharge requirements and Monitoring and Reporting Program [RWQCB 1999a,b]) to groundwater. It has been concluded that the presence of metals at concentrations within historical background ranges for groundwater at NAF El Centro (Table 2-1) and VOCs that are associated with the Site 7 petroleum plume (aromatic hydrocarbons and 1,2-DCA) do not indicate a release from Site 1 (BNI 2000).
- Prevent discharge of contaminated groundwater to surface water through the drainage ditch north of the landfill
- Monitor groundwater to detect releases.

Remedial action alternatives retained for detailed analysis in this FS are designed to accomplish these remedial action objectives. The Site 1 remedial action alternatives considered for detailed analysis, and for which an ARARs analysis is presented in this appendix, are as follows:

- Alternative 1 – no action
- Alternative 2 – continued groundwater monitoring and restrictions on field irrigation
- Alternative 3 – continued groundwater monitoring, ditch lining, and restrictions on field irrigation

B1.2.2 Identifying and Evaluating Federal ARARs

The DON is responsible for identifying federal ARARs as the lead federal agency under CERCLA and the NCP. The final determination of federal ARARs will be made when

the DON issues the ROD. The federal government implements a number of federal environmental statutes that are the source of potential federal ARARs, either in the form of the statutes or regulations promulgated thereunder. Examples include the Resource Conservation and Recovery Act (RCRA), the Clean Water Act, the Safe Drinking Water Act, the Toxic Substances Control Act, and their implementing regulations, to name a few. See NCP preamble at 55 *Federal Register* (Fed. Reg.) 8764–8765 (1990) for a more complete listing.

The proposed response action and alternatives were reviewed against all potential federal ARARs, including but not limited to those set forth at 55 Fed. Reg. 8764–8765 (1990), in order to determine if they were applicable or relevant and appropriate utilizing the CERCLA and NCP criteria and procedures for ARARs identification by lead federal agencies.

B1.2.3 Identifying and Evaluating State ARARs

The process of identifying and evaluating potential state ARARs by the state and the DON is described in this subsection.

B1.2.3.1 SOLICITATION OF STATE ARARs UNDER NCP

U.S. EPA guidance (U.S. EPA 1988b) recommends that the lead federal agency consult with the state when identifying state ARARs for remedial actions. In essence, the CERCLA/NCP requirements at 40 C.F.R. § 300.515(2) for remedial actions provide that the lead federal agency request that the state identify chemical- and location-specific state ARARs upon completion of site characterization. The requirements also provide that the lead federal agency request identification of all categories of state ARARs (chemical-, location-, and action-specific) upon completion of identification of remedial alternatives for detailed analysis. The state must respond within 30 days of receipt of the lead federal agency requests. The remainder of this subsection documents the DON's efforts to date to identify and evaluate state ARARs.

B1.2.3.2 CHRONOLOGY OF EFFORTS TO IDENTIFY STATE ARARs

The following chronology summarizes the DON efforts to obtain state assistance in identifying state ARARs for the response action at NAF El Centro. Key correspondence between the DON and the state agencies relating to this effort is included in the Administrative Record for this site and in Attachment A to this appendix.

In a letter dated 18 April 1995, the DON requested that DTSC identify potential state ARARs for several NAF El Centro Sites, including Site 1. A reply was received on 21 June 1995 (DTSC 1995). This reply contained potential ARARs submitted by the RWQCB, California Integrated Waste Management Board (CIWMB), Department of Fish and Game, and Imperial County Air Pollution Control District.

These ARARs were considered for the applicability or relevance and appropriateness to the site conditions and objectives of the removal action conducted at Site 1 during 1997.

On 25 October 2001, DTSC solicited potential changes to the ARARs identified in the Final Action Memorandum/Remedial Action Workplan (AM/RAW) for Site 1 from the RWQCB and CIWMB. These potential changes were transmitted from DTSC to the DON on 28 November 2001 (Attachment A to this appendix) and included the following:

- State ARARs for solid waste disposal site closure and postclosure maintenance (*California Code of Regulations* [Cal Code Regs.] Title [tit.] 27, §§ 21130, 21135, 21137, 21140, 21142, 21145, 21150, 21160, 20921-20937, 21180, 21190, 21800, 21830, and 21880)
- California Water Code (Cal. Water Code) Division (div.) 7, §§ 13241, 13243, 13263 (a), and 13360 (Porter-Cologne Water Quality Control Act [Porter-Cologne Act])
- Other provisions of the Porter-Cologne Act
- Water Quality Control Plan for the Colorado River Basin Region (Basin Plan) (Cal. Water Code § 13240)
- State Water Resources Control Board (SWRCB) Resolution (Res.) No. 88-63 (Sources of Drinking Water Policy)
- Cal. Code Regs. tit. 27 (portions previously identified under Cal. Code Regs. tit. 23 in the AM/RAW)

State requirements submitted in 1995 and 2001 and pertinent to the proposed remedial action are considered in the evaluation that follows in Sections B2 through A5. The ARARs for the landfill cap and closure identified in the AM/RAW are not part of this FS and are not included in this ARARs analysis. Instead, this FS is limited to addressing the groundwater aspects of the landfill that were not addressed in the AM/RAW. For example, the State has identified sections of Cal. Code Regs. tit. 27 for landfill capping and closure that were previously identified in the AM/RAW.

B1.3 OTHER GENERAL ISSUES

General issues identified during the evaluation of ARARs for Site 1 are discussed in the following subsections.

B1.3.1 General Approach to Requirements of the Federal Resource Conservation and Recovery Act

The RCRA is a federal statute passed in 1976 to meet four goals: the protection of human health and the environment, the reduction of waste, the conservation of energy and natural resources, and the elimination of the generation of hazardous waste as expeditiously as possible. The Hazardous and Solid Waste Amendments (HSWA) of 1984 significantly expanded the scope of RCRA by adding new corrective action requirements, land disposal restrictions, and technical requirements. RCRA, as amended, contains several provisions that are potential ARARs for CERCLA sites.

Substantive RCRA requirements are applicable to response actions on CERCLA sites if the waste is a RCRA hazardous waste, and either:

- the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement; or
- the activity at the CERCLA site constitutes treatment, storage, or disposal, as defined by RCRA (U.S. EPA 1988a).

The preamble to the NCP indicates that state regulations that are components of a federally authorized or delegated state program are generally considered federal requirements and potential federal ARARs for the purposes of ARARs analysis (55 Fed. Reg. 8666, 8742 [1990]). The state of California received approval for its base RCRA hazardous waste management program on 23 July 1992 (57 Fed. Reg. 32726 [1992]). The state of California "Environmental Health Standards for the Management of Hazardous Waste," set forth in Cal. Code Regs. tit. 22, div. 4.5, were approved by U.S. EPA as a component of the federally authorized state of California RCRA program.

The regulations of Cal. Code Regs. tit. 22, div. 4.5 are, therefore, a source of potential federal ARARs for CERCLA response actions. The exception is when a state regulation is "either broader in scope or more stringent" than the corresponding federal RCRA regulations. In that case, such regulations are not considered part of the federally authorized program or potential federal ARARs. Instead, they are purely state law requirements and potential state ARARs.

The U.S. EPA 23 July 1992 notice approving the state of California RCRA program (57 Fed. Reg. 32726 [1992]) specifically indicated that the state regulations addressed certain non-RCRA, state-regulated hazardous wastes that fell outside the scope of federal RCRA requirements. Cal. Code Regs. tit. 22, div. 4.5 requirements would be potential state ARARs for such non-RCRA, state-regulated wastes.

A key threshold question for the ARARs analysis is whether or not the contaminants at Site 1 constitute federal hazardous waste as defined under RCRA and the state's authorized program or qualify as non-RCRA, state-regulated hazardous waste. A discussion of waste characterization is included in Section B1.4.

B1.3.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA) is applicable to state actions but not to actions of the federal government. Furthermore, U.S. EPA and the DON have determined that the requirements of the National Environmental Policy Act (NEPA) and CEQA are no more stringent than the requirements for environmental review under CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA). Pursuant to the provisions of CERCLA, the NCP, and other federal environmental impact evaluation requirements, selecting a remedial action with feasible mitigation measures and provision for public review is designed to assure that the proposed action provides for short- and long-term protection of the environment and public health. Hence, CERCLA performs the same function as, and is substantially parallel to, the state's requirements under CEQA.

For the reasons set forth above, NEPA and CEQA are not ARARs for CERCLA actions.

B1.4 WASTE CHARACTERIZATION

Selection of ARARs involves the characterization of wastes as described below.

B1.4.1 RCRA Hazardous Waste Determination

Federal RCRA hazardous waste determination is necessary to determine whether a waste is subject to RCRA requirements at Cal. Code Regs. tit. 22, div. 4.5 and other state requirements at Cal. Code Regs. tit. 23, div. 3, Chapter (ch.) 15. The first step in the RCRA hazardous waste characterization process is to evaluate contaminated media at the site(s) and determine whether it constitutes a "listed" RCRA waste. The preamble to the NCP states that "...it is often necessary to know the origin of the waste to determine whether it is a listed waste and that, if such documentation is lacking, the lead agency may assume it is not a listed waste" (55 Fed. Reg. 8666, 8758 [1990]).

This approach is confirmed in U.S. EPA guidance for CERCLA compliance with other laws (U.S. EPA 1988a), as follows:

"To determine whether a waste is a listed waste under RCRA, it is often necessary to know the source. However, at many Superfund sites, no information exists on the source of wastes The lead agency should use available site information, manifests, storage records, and vouchers in an effort to ascertain the nature of these contaminants. When this documentation is not available, the lead agency may assume that the wastes are not listed RCRA hazardous wastes, unless further analysis or information becomes available that allows the lead agency to determine that the wastes are listed RCRA hazardous wastes."

RCRA hazardous wastes that have been assigned U.S. EPA hazardous waste numbers (or codes) are listed in Cal. Code Regs. tit. 22, §§ 66261.30–66261.33. The lists include hazardous waste codes beginning with the letters "F," "K," "P," and "U."

Knowledge of the exact source of a waste is required for source-specific listed wastes ("K" waste codes). Some knowledge of the nature or source of the waste is required even for listed wastes from nonspecific sources, such as spent solvents ("F" waste codes) or commercial chemical products ("P" and "U" waste codes). These listed RCRA hazardous wastes are restricted to commercially pure chemicals used in particular processes such as degreasing.

P and U wastes cover only unused and unmixed commercial chemical products, particularly spilled or off-spec products (U.S. EPA 1991a). Not every waste containing a P or U chemical is a hazardous waste. To determine whether a CERCLA investigation-derived waste contains a P or U waste, there must be direct evidence of product use. In particular, all the following criteria must be met The chemicals must be:

- discarded (as described in 40 C.F.R. § 261.2[a][2]),
- either off-spec commercial products or a commercially sold grade,
- not used (soil contaminated with spilled unused wastes is a P or U waste), and
- the sole active ingredient in a formulation.

Based on historical site information, manifests, and storage records, the original source of the Site 1 COCs is unknown. Therefore, the determination for this FS is that the groundwater does not constitute a RCRA listed hazardous waste.

The second step in the RCRA hazardous waste characterization process is to evaluate potential hazardous characteristics of the waste. The evaluation of characteristic waste is described in U.S. EPA guidance as follows (U.S. EPA 1988a):

"Under certain circumstances, although no historical information exists about the waste, it may be possible to identify the waste as RCRA characteristic waste. This is important in the event that 1) remedial alternatives under consideration at the site involve on-site treatment, storage, or disposal, in which case RCRA may be triggered as discussed in this section; or 2) a remedial alternative involves off-site shipment. Since the generator (in this case, the agency or responsible party conducting the Superfund action) is responsible for determining whether the wastes exhibit any of these characteristics (defined in 40 C.F.R. §§ 261.21–261.24), testing may be required. The lead agency must use best professional judgment to determine, on a site-specific basis, if testing for hazardous characteristics is necessary."

Hazardous waste characteristics, as defined in 40 C.F.R. §§ 261.21–261.24, are commonly referred to as ignitability, corrosivity, reactivity, and toxicity. California environmental health standards for the management of hazardous waste set forth in Cal. Code Regs. tit. 22, div. 4.5 were approved by U.S. EPA as a component of the federally authorized California RCRA program. Therefore, the characterization of RCRA waste is based on the state requirements.

The characteristics of ignitability, corrosivity, reactivity, and toxicity are defined in Cal. Code Regs. tit. 22, §§ 66261.21–66261.24. According to Cal. Code Regs. tit. 22, § 66261.24(a)(1)(A), "A waste that exhibits the characteristic of toxicity pursuant to subsection (a)(1) of this section has the EPA Hazardous Waste Number specified in Table I of this section which corresponds to the toxic contaminant causing it to be hazardous." Table I assigns hazardous waste codes beginning with the letter "D" to wastes that exhibit the characteristic of toxicity; D waste codes are limited to "characteristic" hazardous wastes.

According to Cal. Code Regs. tit. 22, § 66261.10, waste characteristics can be measured by an available standardized test method or be reasonably classified by generators of waste based on their knowledge of the waste provided that the waste has already been reliably tested or if there is documentation of chemicals used. Groundwater contamination at Site 1 is not ignitable, corrosive, or reactive, as defined in Cal. Code Regs. tit. 22, § 66261.21–66261.23. This determination was based on knowledge of the nature and concentrations of contaminants.

The requirements at Cal. Code Regs. tit. 22, § 66261.24 list the toxic contaminant concentrations that determine the characteristic of toxicity. The concentration limits are in milligrams per liter (mg/L). These units are directly comparable to total concentrations in waste groundwater and surface water. For waste soils, these concentrations apply to the extract or leachate produced by the toxicity characteristic leaching procedure (TCLP).

A waste is considered hazardous if the contaminants in the wastewater or in the soil TCLP extract equal or exceed the TCLP limits. TCLP testing is required only if total contaminant concentrations in soil equal or exceed 20 times the TCLP limits because TCLP uses a 20-to-1 dilution for the extract (U.S. EPA 1988a). Concentrations of all constituents in contaminated groundwater samples at the site were compared to the TCLP limits at Cal. Code Regs. tit. 22, § 66261.24(a)(1). None of the constituent concentrations exceeded the listed concentrations. Therefore, the contaminated groundwater is determined not to be a RCRA hazardous waste, based on the toxicity characteristic. Appropriate analytical testing will be performed if groundwater is removed as part of any potential groundwater remediation efforts (none are proposed).

B1.4.2 California-Regulated, Non-RCRA Hazardous Waste

A waste determined not to be an RCRA hazardous waste may still be considered a state-regulated non-RCRA hazardous waste. The state is broader in scope in its RCRA program in determining hazardous waste. Cal. Code Regs. tit. 22, § 66261.24(a)(2) lists the total threshold limit concentrations (TTLCs) and the soluble threshold limit concentrations (STLCs) for non-RCRA hazardous waste. The state applies its own leaching procedure, a California waste extraction test (WET), that uses a different acid reagent and has a different dilution factor (tenfold). There are other state requirements that may be broader in scope than federal ARARs for identifying non-RCRA wastes regulated by the state. These may be potential ARARs for wastes not covered under federal ARARs. See additional subsections of Cal. Code Regs. tit. 22, § 66261.24.

A waste is considered hazardous if its total concentrations exceed the TTLCs or if the extract concentrations from the WET exceed the STLCs. A WET is required when the total concentrations exceed the STLC but are less than the TTLCs (Cal. Code Regs. tit. 22, div. 4.5, ch. 11, Appendix [app.] II [b]). Concentrations of all constituents in contaminated groundwater samples at the site were compared to the STLC limits at Cal. Code Regs. tit. 22, § 66261.24(a)(2). None of the constituent concentrations exceeded the listed concentrations. Therefore, the contaminated groundwater is determined not to be a California-regulated non-RCRA hazardous waste, based on the toxicity characteristic. Appropriate analytical testing will be performed if groundwater is removed as part of any potential groundwater remediation efforts (none are proposed).

B1.4.3 Other California Waste Classifications

For waste discharged after 18 July 1997, solid waste classifications at Cal. Code Regs. tit. 27, §§ 20210, 20220, and 20230 are used to determine applicability of waste management requirements. These are summarized below.

A "designated waste" under Cal. Code Regs. tit. 27, § 20210 is defined at Cal. Water Code § 13173. Under Cal. Water Code § 13173, designated waste is hazardous waste that has been granted a variance from hazardous waste management requirements or nonhazardous waste that consists of or contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in

concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state.

A nonhazardous solid waste under Cal. Code Regs. tit. 27, § 20220 is all putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and semisolid wastes, and other discarded waste (whether of solid or semisolid consistency), provided that such wastes do not contain wastes that must be managed as hazardous wastes or wastes that contain soluble pollutants in concentrations that exceed applicable water quality objectives or could cause degradation of waters of the state.

Under Cal. Code Regs. tit. 27, § 20230, inert waste is that subset of solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives and does not contain significant quantities of decomposable waste

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Section B2
CHEMICAL-SPECIFIC ARARs

Chemical-specific ARARs are generally health- or risk-based numerical values or methodologies applied to site-specific conditions that result in the establishment of a cleanup level. Many potential ARARs associated with particular remedial alternatives (such as closure or discharge) can be characterized as action-specific but include numerical values or methodologies to establish them so they fit in both categories (chemical- and action-specific).

This section presents ARARs determination conclusions addressing numerical values for groundwater and a summary of the ARARs conclusions and a more detailed discussion of the ARARs for groundwater.

Potential federal and state chemical-specific ARARs are summarized in Tables B2-1 and B2-2, respectively, which are at the end of this section.

B2.1 SUMMARY OF ARARs CONCLUSIONS BY MEDIUM

Groundwater is the environmental medium potentially affected by the Site 1 remedial alternatives. The conclusions for ARARs pertaining to this medium are presented in the following sections.

B2.1.1 Groundwater ARARs Conclusions

The substantive provisions of the following requirements are the most stringent of the potential federal and state chemical-specific ARARs and TBCs for remediation of Site 1 groundwater:

- Basin Plan (RWQCB 1994)
- Cal. Water Code, div. 7, §§ 13304, 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Act)
- Waste Discharge Requirements, RWQCB Order No. 99-010

B2.1.2 Surface Water ARARs Conclusions

Surface water is not present at Site 1. Surface water from field irrigation is present approximately 1,000 feet west of Site 1. The closest permanent surface water is located approximately 1 mile west of Site 1 (New River). The existing multilayer cover prevents surface water infiltration resulting from precipitation from contacting the landfill material. In addition, reduced irrigation in the vicinity of Site 1 has caused the groundwater elevation to drop below the base of the landfill material and the drainage ditch located adjacent to the north side of Site 1. Since surface water is not present in the vicinity of Site 1, and remedial alternatives are designed to reduce irrigation of the fields around Site 1 to prevent groundwater from rising to a level that would produce surface water in the unlined drainage ditch and contacting landfill material, there are no chemical-specific ARARs for surface water.

B2.1.3 Soil ARARs Conclusions

Soil is not a medium of concern and the proposed remedial alternatives do not address the cleanup of soils. Therefore, there are no chemical-specific ARARs for soil.

B2.1.4 Sediment ARARs Conclusions

Sediment is not a medium of concern and the proposed remedial alternatives do not address the cleanup of sediments. Therefore, there are no chemical-specific ARARs for sediment.

B2.1.5 Air ARARs Conclusions

Air is not a medium of concern and the proposed remedial alternatives do not address the cleanup of air. Therefore, there are no chemical-specific ARARs for air.

B2.2 DETAILED DISCUSSION OF ARARs BY MEDIUM

The following subsections provide a detailed discussion of federal and state ARARs by medium.

B2.2.1 Groundwater ARARs

Shallow groundwater at NAF El Centro is part of the Imperial Hydrogeologic Unit. Beneficial groundwater uses for the Imperial Hydrogeologic Unit listed in the Basin Plan includes municipal and industrial use However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria provided in SWRCB Res. 88-63 (SWRCB 1988) for beneficial use because of the high salinity and low aquifer yields. These criteria include total dissolved solids (TDS) not to exceed 3,000 mg/L and capability to produce an average sustained yield of 200 gallons per day (RWQCB 1994). In a letter dated 30 June 1998, RWQCB stated that the upper aquifer at NAF El Centro currently has no known beneficial use due to low aquifer yield and poor quality of the groundwater (TDS commonly in excess of 3,000 mg/L) (Stormo, pers com. 1998).

Reported mineral concentrations in groundwater samples collected from NAF El Centro monitoring wells generally exceeded California secondary maximum contaminant levels (MCLs) and U.S. EPA secondary MCLs. Reported chloride, sulfate, and TDS concentrations, indicative of the saline nature of the groundwater, exceeded MCLs in groundwater samples collected from most monitoring wells. Based upon typical reported concentrations of chloride, sulfate, and TDS, groundwater at NAF El Centro is not of sufficient quality for municipal uses without prior treatment.

B2.2.1.1 FEDERAL

One of the significant issues in identifying ARARs for groundwater under the Safe Drinking Water Act (SDWA) and RCRA is whether the groundwater at the site can be classified as a source of drinking water. U.S. EPA groundwater policy is set forth in the preamble to the NCP (55 Fed. Reg. 8666, 8752–8756 [1990]). This policy uses the

groundwater classification system set forth in the draft U.S. EPA Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy (U.S. EPA 1986). Under this policy, groundwater is classified in one of three categories (Class I, II, or III), based on ecological importance, replaceability, and vulnerability considerations. Irreplaceable groundwater that is currently used by a substantial population or groundwater that supports a vital habitat is considered to be Class I. Class II consists of groundwater that is currently being used or that might be used as a source of drinking water in the future. Groundwater that cannot be used for drinking water due to insufficient quality (e.g., high salinity or widespread, naturally occurring contamination) or quantity is considered to be Class III. The U.S. EPA guidelines define Class III groundwater as groundwater with TDS concentrations over 10,000 mg/L and a yield of less than 150 gallons per day (U.S. EPA 1986). Class III groundwater can also be classified based on economic or technological treatability tests as well as quality or quantity (both criteria are not needed, just one or the other).

Groundwater in the vicinity of El Centro is classified as Class II. However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for beneficial use because of the high salinity and low aquifer yields (Stormo, pers. com. 1998, Attachment A to this appendix) and, therefore, meets the criteria for Class III. The evaluation of ARARs for Site 1 is based on this determination.

Safe Drinking Water Act

Under the SDWA, MCLs are potentially relevant and appropriate requirements for aquifers with Class I and Class II characteristics and, therefore, are potential federal ARARs. Because groundwater does not meet the criteria for a potential source of drinking water, MCLs are neither applicable nor relevant and appropriate and are not used to determine preliminary response action goals (U.S. EPA 1988a; 55 Fed. Reg. 8666, 8750–8754 [1990]).

RCRA Hazardous Waste

The federal RCRA requirements at 40 C.F.R. pt. 261 do not apply in California because the state RCRA program is authorized. The authorized state RCRA requirements are therefore considered potential federal ARARs (see Section B1.3.1). The applicability of RCRA requirements depends on whether the waste is an RCRA hazardous waste, whether the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement, and whether the activity at the site constitutes treatment, storage, or disposal as defined by RCRA. However, RCRA requirements may be relevant and appropriate even if they are not applicable. Examples include activities that are similar to the definition of RCRA treatment, storage, or disposal for waste that is similar to RCRA hazardous waste.

The determination of whether a waste is an RCRA hazardous waste can be made by comparing the site waste to the definition of RCRA hazardous waste. The RCRA requirements at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are potential ARARs because they define RCRA

hazardous waste. A waste can meet the definition of hazardous waste if it has the toxicity characteristic of hazardous waste. This determination is made by using the TCLP. The maximum concentrations allowable for the TCLP listed in § 66261.24(a)(1)(B) are potential federal ARARs for determining whether the site has hazardous waste. If the site waste has concentrations exceeding these values, it is determined to be a characteristic RCRA hazardous waste (see Section B1.4.1).

RCRA Groundwater Protection Standards

Groundwater concentration limits for RCRA-regulated units are promulgated at Cal. Code Regs. tit. 22, § 66264.94. For corrective action programs, Cal. Code Regs. tit. 22, § 66264.94(c) states that the concentrations of compounds must not exceed the background level of that constituent in groundwater or, if achieving background is shown to be technologically or economically infeasible, some higher concentration limit that is set as part of the corrective action program. In no event shall a concentration limit greater than background exceed MCLs established under the federal SDWA (Cal. Code Regs. tit. 22, §§ 64431 and 64444).

These standards are not "applicable" because Site 1 does not contain a RCRA waste management unit, and the wastes being addressed by the Site 1 actions are not classified as RCRA hazardous wastes. In addition, since the Site 1 landfill is regulated under Waste Discharge Requirements (WDRs) of the RWQCB (Order No. 99-010) as a "nonhazardous" landfill, RCRA requirements are not relevant or appropriate for Site 1. WDRs for Site 1 are included as Appendix A of the Site 1 FS.

CERCLA Alternative Concentration Levels

Under CERCLA 121(d)(2)(B)(ii) (42 U.S.C. § 9621[d][2][B][ii]), an alternative concentration limit (ACL) using a point of exposure (akin to a point of compliance [POC]) beyond the facility boundary can be used where:

- there are known and projected points of entry of such groundwater into surface water,
- there will be no statistically significant increase of hazardous constituents from groundwater in surface water at the point of entry or at any point where there is reason to believe accumulation of constituents may occur downstream, and
- there are enforceable institutional controls to preclude human exposure at any point between the facility boundary and the point of entry into surface water

There is currently no surface water present in the area surrounding Site 1. In addition, remedial alternatives have been developed to reduce irrigation of a field adjacent to Site 1 to prevent groundwater from rising to a level that would produce surface water in the unlined drainage ditch adjacent to the north side of Site 1, and from coming into contact with the landfill material. Therefore, exposure-based CERCLA ACLs are not ARARs for Site 1.

Federal Ambient Water Quality Criteria

Section 304(a)(1) of the Clean Water Act (CWA) (33 U.S.C. § 1314[a][1]) directs U.S. EPA to publish and periodically update federal ambient water quality criteria (FAWQC). These standards are intended to protect human health and aquatic life from contamination in surface water. The FAWQC are updated in the *Federal Register*. The latest list of the National Water Quality Criteria through June 2000 was published in the *Federal Register* on 10 December 1998 with amendments in 64 Fed. Reg. 19781 (1999). These criteria are to reflect the latest scientific knowledge on the identifiable effects of pollutants on public health and welfare, aquatic life, and recreation. These criteria serve as guidance to states in adopting water quality standards under Section 303(c) (33 U.S.C. § 1313[c]) of the CWA that protect aquatic life from acute and chronic effects.

The applicability of surface water criteria to groundwater is discussed in CERCLA Section 121(d)(2)(B)(i) (42 U.S.C. § 9621[d][2][B][i]), 40 C.F.R. § 300.430(e), and the NCP preamble (55 Fed. Reg. 8666, 8754–8755 [1990]). Although the FAWQC are nonenforceable guidelines, they may be potentially relevant and appropriate for groundwater only in the absence of promulgated MCLs or maximum contaminant level goals (MCLGs). In such cases, the FAWQC may be adjusted to reflect only drinking water use and be used as cleanup goals for the response action. Because the groundwater at Site 1 is not a potential source of drinking water, neither MCLs nor the FAWQC are potential ARARs for the groundwater. In addition, there are no planned discharges of groundwater to surface water as part of the proposed remedial alternatives. Therefore, FAWQCs are not considered ARARs for this FS.

Water Quality Standards

On 22 December 1992, U.S. EPA promulgated federal water quality standards under the authority of the federal CWA Section 303(c)(2)(B), 33 U.S.C. ch. 26, § 1313(c)(2)(B), in order to establish water-quality standards required by the CWA where the state of California and other states had failed to do so (57 Fed. Reg. 60848 [1992]). These standards have been amended over the years in the *Federal Register* including amendments of the National Toxics Rule (60 Fed. Reg. 22228 [1995]). These water quality standards, as amended, are codified at 40 C.F.R. § 131.36. Additional and revised water quality standards for salinity for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary were codified at 40 C.F.R. § 131.37.

U.S. EPA promulgated a rule on 18 May 2000 to fill a gap in California water quality standards that was created in 1994 when a state court overturned the state's water quality control plans that contained water quality criteria for priority toxic pollutants. The rule is commonly called the California Toxics Rule (CTR). The rule is codified at 40 C.F.R. § 131.38. These federal criteria are legally applicable in the state of California for inland surface waters and enclosed bays and estuaries for all purposes and programs under the CWA.

The water quality standards contained in 40 C.F.R. § 131.36, 131.37, and 131.38 are potential applicable federal ARARs for groundwater cleanup response actions that discharge to surface water. In this case, there are no planned discharges of groundwater

to surface water as part of the proposed remedial alternatives. Therefore, the water quality standards are not potential ARARs for the remedial actions proposed.

B2.2.1.2 STATE

The state has identified requirements as ARARs as described in Section B1.2.3.2. This section includes evaluation of those submitted ARARs potentially pertinent to the proposed remedial alternatives described in Section B1.2.1.

Porter-Cologne Act

The Porter-Cologne became div. 7 of the Cal. Water Code in 1969. The Porter-Cologne Act requires each regional board to formulate and adopt Basin Plans for all areas within the region (Cal. Water Code § 13240). It also requires each regional board to establish water quality objectives (WQOs) that will protect the beneficial uses of the water basin (Cal. Water Code § 13241 and to prescribe waste discharge requirements that would implement the Basin Plan for any discharge of waste to the waters of the state (Cal. Water Code § 13263[a]).

Other sections of the Porter-Cologne Act include Cal. Water Code § 13243, which allows regional boards to specify conditions or areas where waste discharge is not permitted. Cal. Water Code § 13269 provides the boards authority for waivers for reports or compliance with requirements as long as it is not against the public interest. Cal. Water Code § 13360 specifies circumstances for regional boards to order compliance in a specific manner.

The DON accepts the substantive provisions of Cal. Water Code §§ 13241, 13243, 13263(a), 13269, and 13360 of the Porter-Cologne Act as enabling legislation as implemented through the beneficial uses, WQOs, waste discharge requirements, and promulgated policies of the Basin Plan as potential state ARARs. Where waste discharge requirements are specified in general permits, the substantive requirements in the permits, but not the permits themselves, are potential ARARs

Cal. Water Code § 13304 sets forth enforcement authority and an enforcement process (orders issued by the state) and is procedural in nature. It does not constitute an ARAR because it does not itself establish or contain substantive environmental "standards, requirements, criteria, or limitations" (CERCLA § 121 [42 U.S.C. § 9621]) and is not in itself directive in intent. Through its enforcement authority and procedures, substantive state environmental standards set forth in other statutes, regulations, plans, and orders are enforced. In addition, Cal. Water Code § 13304 is no more stringent than the substantive requirements of the potential state ARARs identified in the above paragraphs or potential federal ARARs for groundwater.

Comprehensive Water Quality Control Plan for Colorado River Basin (Basin Plan)

The DON accepts the substantive provisions of the Basin Plan, including beneficial uses, WQOs, and waste discharge requirements, as potential ARARs.

The Basin Plan was prepared and implemented by the RWQCB Colorado River Basin Region to protect and enhance the quality of the waters in the Colorado River Basin. The Basin Plan establishes location-specific beneficial uses and WQOs for the surface water and groundwater of the region and is the basis of the RWQCB Colorado River Basin regulatory programs. The Basin Plan includes both numeric and narrative WQOs for specific groundwater subbasins. The WQOs are intended to protect the beneficial uses of the waters of the region and to prevent nuisance.

Beneficial use and reuse of water are key aspects of the Basin Plan for the Colorado River Basin. NAF El Centro is located in the Colorado River Basin. Groundwater in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for beneficial use because of the high salinity and low aquifer yields. See Section B2.2.1 for a description of potential beneficial uses for the upper aquifer at NAF El Centro. The requirements of the Basin Plan have been included in the WDRs for the landfill at Site 1 (Order No. 99-010). WDRs for Site 1 are included as Appendix A.

State Water Resources Control Board Res. 88-63, Adoption of Policy Entitled "Sources of Drinking Water"

SWRCB Res. 88-63 establishes criteria to help RWQCBs identify potential sources of drinking water (SWRCB 1988). According to this resolution, all groundwater in California is considered suitable or potentially suitable for domestic or municipal freshwater supply except in cases where any one of the following water quality and production criteria cannot be met.

- TDS exceed 3,000 mg/L (or electrical conductivity is greater than 5,000 micromhos per centimeter) and the RWQCB does not reasonably expect the groundwater to supply a public supply system.
- Groundwater is contaminated, either by natural processes or by human activity unrelated to a specific pollution incident, and cannot reasonably be treated for domestic use either by best management practices or best economically available treatment practices.
- The groundwater does not provide sufficient water to supply a single well capable of producing an average sustained yield of 200 gallons per day.

The groundwater beneath the landfill at Site 1 does not meet the criteria for a potential drinking water source. The aquifer does not support the sustained yield necessary, and the quality exceeds the TDS criteria. Therefore, the SWRCB Res. 88-63 is not an ARAR for the proposed remedial actions

Colorado River Basin Regional Water Quality Control Board Order No. 99-010

RWQCB Order No. 99-010 sets forth the waste discharge requirements for the landfill at Site 1, NAF El Centro. The substantive provisions that address groundwater are potentially applicable for the proposed remedial actions.

Cal. Code Regs. tit. 27, div. 2, Subdivision 1, §§ 20380(a), 20400(a), (c), (d), (e), and (g), and 20405

The DON has reviewed the provisions of Cal Code Regs. tit. 27, §§ 20380(a) and 20400(a), (c), (d), (e), and (g), and 20405. These sections address the concentration limits and POC for monitoring at waste management units for other than hazardous wastes. The DON has determined that the substantive provisions of these requirements pertinent to groundwater are potentially applicable to the Site 1 landfill. These requirements are included in the WDRs for the landfill (Order No. 99-010) (Appendix A)

Table B2-1
Potential Federal Chemical-Specific[a] ARARs by Medium

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
GROUNDWATER				
Safe Drinking Water Act (42 U.S.C., ch. 6A, § 300[f]–300[j]-26)[c]				
National primary drinking water standards are health-based standards for public water systems (MCLs).	Public water system.	40 C.F.R. § 141.11, 141.12, 141.61(a) and (c), and 141.62(b)	Not an ARAR	The NCP defines MCLs as relevant and appropriate for groundwater determined to be a current or potential source of drinking water in cases where MCLGs are not ARARs. MCLs are relevant and appropriate for Class I and Class II aquifers, but not for Class III aquifers. In addition, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for beneficial use because of high salinity and low aquifer yields. MCLs are neither applicable nor relevant and appropriate and are not used to determine preliminary response action goals for aquifers with Class III characteristics.
MCLGs pertain to known or anticipated adverse health effects (also known as recommended MCLs).	Public water system.	40 C.F.R. § 141.50–141.51	Not an ARAR	MCLGs that have nonzero values may be relevant and appropriate for groundwater determined to be a current or potential source of drinking water. However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for beneficial use because of high salinity and low aquifer yields.
National secondary drinking water regulations are standards for the aesthetic qualities of public water systems (SMCLs).	Public water system.	40 C.F.R. § 143.3	Not an ARAR	SMCLs are federal contaminant levels intended as guidelines for the states. Because they are not enforceable, federal SMCLs are not ARARs.

(table continues)

Table B2-1 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Resource Conservation and Recovery Act (42 U.S.C., ch. 82, §§ 6901–6991[i])[c]				
Definition of RCRA hazardous waste.	Waste.	Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Applicable	It is not anticipated that solid waste will be generated as a result of the proposed remedial alternatives. However, in the event that it is, the substantive requirements of the cited sections would be applicable for characterizing waste.
A solid waste is characterized as toxic based on the TCLP, if the waste exceeds the TCLP maximum concentrations.	Waste.	Cal. Code Regs. tit. 22, § 66261.24(a)(1)(B)	Applicable	It is not anticipated that solid waste will be generated as a result of the proposed remedial alternatives. However, in the event that it is, the substantive requirements of the cited sections would be applicable for characterizing waste.
Groundwater protection standards: Owners/operators of RCRA treatment, storage, or disposal facilities must comply with conditions in this section that are designed to ensure that hazardous constituents entering the groundwater from a regulated unit do not exceed the concentration limits for contaminants of concern set forth under Cal. Code Regs. tit. 22, § 66264.94 in the uppermost aquifer underlying the waste management area of concern at the POC.	A regulated unit that receives or has received hazardous waste before 26 July 1982 or regulated units that ceased receiving hazardous waste prior to 26 July 1982 where constituents in or derived from the waste may pose a threat to human health or the environment.	Cal. Code Regs. tit. 22, § 66264.94, except 66264.94(a)(2) and 66264.94(b)	Not an ARAR	The RCRA groundwater protection standards are applicable only for regulated units managing hazardous wastes. Since the landfill has a state permit as a nonhazardous waste landfill, the RCRA groundwater protection standards are not potentially relevant and appropriate federal ARARs for groundwater at NAF El Centro.
Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C., ch. 103, §§ 9601–9675)[c]				
ACLs using a point of exposure beyond the facility boundary.	Known or projected points of entry from groundwater to surface water.	CERCLA § 121(d)(2)(B)(ii) 42 U.S.C., ch. 103, § 9621	Not an ARAR	There is no known discharge of groundwater to surface water in the vicinity of NAF El Centro. Therefore, exposure-based CERCLA ACLs are not considered to be ARARs for this action.

(table continues)

Table B2-1 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Clean Water Act of 1977, as Amended (33 U.S.C., ch. 26, §§ 1251–1387)[c]				
Federal ambient water quality criteria.	Discharges to waters of the United States and groundwater.	33 U.S.C. § 1314(a) and 42 U.S.C. § 9621(d)(2) 64 Fed. Reg. 19781 (22 April 1999)	Not an ARAR	Federal ambient water quality criteria are not generally relevant and appropriate in selecting cleanup levels in groundwater and there are no proposed groundwater discharges to surface water.
Water quality standards.	Discharges to waters of the United States.	40 C.F.R. § 131.36(b) and 131.38	Not an ARAR	No discharges to surface waters are anticipated as part of the proposed remedial alternatives.
SURFACE WATER				
Safe Drinking Water Act (42 U.S.C., ch. 6A, § 300[f]–300[j]-26)[c]				
National primary drinking water standards are health-based standards for public water systems (MCLs).	Public water system.	40 C.F.R. § 141.11–141.13, excluding § 141.11(d)(3), 141.15, 141.16, 141.61(a) and (c), and 141.62(b)	Not an ARAR	The NCP defines MCLs as relevant and appropriate for surface water determined to be a current or potential source of drinking water in cases where MCLGs are not ARARs. However, the groundwater at NAF El Centro does not meet the criteria for a potential source of drinking water because of high salinity and low aquifer yield.
Ensure safety of public water systems; remedial actions must meet cleanup standards; MCLGs pertain to known or anticipated health effects (also known as recommended MCLs).	Public water system; remedial activities impacting groundwater; groundwater that is a potential source of drinking water.	40 C.F.R. § 141.50–141.51	Not an ARAR	MCLGs that have nonzero values are relevant and appropriate for surface water determined to be a current or potential source of drinking water (NCP Section 300.430[e][2][I][B]–[D]). However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for a potential drinking water source because of high salinity and low aquifer yield.

(table continues)

Table B2-1 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
National secondary drinking water regulations are standards for the aesthetic qualities of public water systems (SMCLs).	Public water system.	40 C.F.R. § 143.3	Not an ARAR	SMCLs are federal contaminant levels intended as guidelines for the states. Because they are not enforceable, federal SMCLs are not ARARs. In addition, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for a potential drinking water source because of high salinity and low aquifer yield.
Clean Water Act, as Amended (33 U.S.C., ch. 26, §§ 1251–1387)[c]				
Federal ambient water quality standards.	Discharges to waters of the United States.	40 C.F.R. § 131.36(b)	Not an ARAR	Federal water quality standards would be applicable for any discharges to surface waters. However, no discharges to surface waters are anticipated as part of the proposed remedial alternatives.
Effluent limitations that meet technology-based requirements, including BCPCT and BAT economically achievable.	Discharges to waters of the United States.	33 U.S.C., ch. 26, § 1311(b)(2)	Not an ARAR	No discharges to surface waters are anticipated as part of the proposed remedial alternatives.
Water quality criteria.	Discharges to waters of the United States and groundwater.	33 U.S.C., ch. 26, § 1314(a) and 42 U.S.C., ch. 103, § 9621(d)(2) 64 Fed. Reg. 19781 (22 April 1999)	Not an ARAR	No discharges to surface waters are anticipated as part of the proposed remedial alternatives.
Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C., ch. 103, §§ 9601–9675)[c]				
ACLs using a point of exposure beyond the facility boundary.	Known or projected points of entry from groundwater to surface water.	CERCLA Section 121(d)(2)(B)(ii) 42 U.S.C., ch. 103, § 9621	Not an ARAR	There is no known discharge of groundwater to surface water in the vicinity of the NAF El Centro. Therefore, exposure-based CERCLA ACLs are not considered to be ARARs for this action.

(table continues)

Table B2-1 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
		SOIL		
Groundwater Protection Standards: requirements to ensure that hazardous constituents entering the groundwater from a regulated unit do not exceed the concentration limits for contaminants of concern in the uppermost aquifer underlying the waste management area of concern at the POC.	A regulated unit that receives or has received hazardous waste before 26 July 1982 or regulated units that ceased receiving hazardous waste prior to 26 July 1982 where constituents in or derived from the waste may pose a threat to human health or the environment.	Cal. Code Regs. tit. 22, § 66264.94(a)(1) and (3), (c), (d), and (e)	Not an ARAR	There are no surface waters at Site 1.
		AIR		
Clean Air Act (42 U.S.C., ch. 85, §§ 7401–7671)[c]				
NAAQS: Primary and secondary standards for ambient air quality to protect public health and welfare (including standards for particulate matter and lead).	Contamination of air affecting public health and welfare.	40 C.F.R. § 50.4–50.12	Not an ARAR	Not enforceable and therefore not an ARAR.
No net increase in emissions, pursuant to Section 40918 of the Health and Safety Code, from new or modified stationary sources that emit or have the potential to emit 137 pounds per day or more of any nonattainment pollutant or its precursors.	New stationary sources and all modifications to existing stationary sources that are subject to APCD permit requirements and, after construction, emit or have the potential to emit one or more affected pollutants.	Imperial Valley Rule 207, New and Modified Stationary Source Review	Not an ARAR	The proposed remedial alternatives do not have the potential to emit 137 pounds per day of any nonattainment pollutant.

(table continues)

Table B2-1 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Prohibits the discharge of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health or safety of any such persons or the public or that cause or have a natural tendency to cause injury or damage to business or property.	Air emissions from any source.	Imperial Valley Rule 407, Nuisances	Not an ARAR	The DON is troubled by the vague, subjective nature of the nuisance rule and the lack of objective standards, as well as the inclusion of subjective nonenvironmental criteria such as "annoyance, repose, and comfort," and so forth.
Any person engaging in any active operations identified in Section F of this rule must implement and maintain applicable RACMs, unless the implementation of such RACM endangers or could endanger the health or safety of the public.	Any active operation and/or man-made or man-caused condition or practice capable of generating fugitive dust (PM-10) as specified in this regulation.	Imperial Valley Rule 480, Fugitive Dust Requirements for Control of Fine Particulate Matter	Not an ARAR	There are no planned emissions of dust or particulate matter associated with the proposed remedial alternatives.

Notes:

[a] many potential action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables

[b] only the substantive provisions of the requirements cited in this Table Bre potential ARARs

[c] statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered potential ARARs

(table continues)

Table B2-1 (continued)

Acronyms/Abbreviations:
ACL – alternative concentration limit
APCD – Air Pollution Control District
ARAR – applicable or relevant and appropriate requirement
BAT – best available technology
BCPCT – best conventional pollution control technology
CAA – Clean Air Act
Cal. Code Regs. – *California Code of Regulations*
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R. – *Code of Federal Regulations*
ch. – chapter
DON – Department of the Navy
Fed. Reg. – Federal Register
LDR – land disposal restriction
MCL – maximum contaminant level
MCLG – maximum contaminant level goal
NAAQS – National Ambient Air Quality Standards (primary and secondary)
NAF – Naval Air Facility
NCP – National Oil and Hazardous Substances Pollution Contingency Plan
POC – point of compliance
RCRA – Resource Conservation and Recovery Act
§ – section
SMCL – secondary maximum contaminant level
TCLP – toxicity characteristic leaching procedure
tit. – title
U.S.C. – *United States Code*
U.S. EPA – United States Environmental Protection Agency

Table B2-2
Potential State Chemical-Specific[a] ARARs by Medium

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
GROUNDWATER, SURFACE WATER, SOIL, SEDIMENTS, AND AIR				
Cal-EPA Department of Toxic Substances Control[c]				
Definition of "non-RCRA hazardous waste."	Waste.	Cal. Code Regs. tit. 22, § 66261.22(a)(3) and (4), § 66261.24(a)(2)–(a)(8), § 66261.101, § 66261.3(a)(2)(C) or § 66261.3(a)(2)(F)	Applicable	It is not anticipated that solid waste will be generated as a result of the proposed remedial alternatives. However, in the event that it is, the substantive requirements of the cited sections would be applicable for characterizing waste.
State MCL list.	Source of drinking water.	Cal. Code Regs. tit. 22, §§ 64431 and 64444	Not an ARAR	Like federal MCLs, these are tap water standards and may be relevant and appropriate for cleanup of Class I and Class II aquifers if more stringent than federal ARARs but not ARARs for Class III aquifers. Groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria for beneficial use because of high salinity and low aquifer yields. MCLs are neither applicable nor relevant and appropriate and are not used to determine preliminary response action goals for aquifers with Class III characteristics.
State secondary MCL list.	Source of drinking water.	Cal. Code Regs. tit. 22, § 64449(a)	Not an ARAR	Groundwater at Site 1 is not potential source of drinking water.

(table continues)

Table B2-2 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
State and Regional Water Quality Control Boards[c]				
Authorizes the SWRCB and RWQCB to establish in water quality control plans beneficial uses and numerical and narrative standards to protect both surface water and groundwater quality. Authorizes regional water boards to issue permits for discharges to land or surface or groundwater that could affect water quality, including NPDES permits, and to take enforcement action to protect water quality.		Cal. Water Code div. 7, §§ 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Act)	Applicable	The DON accepts the substantive provisions of §§ 13241, 13243, 13263(a), 13269, and 13360 of the Porter-Cologne Act enabling legislation, as implemented through the beneficial uses, WQOs, waste discharge requirements, promulgated policies of the Basin Plan, as potential ARARs.
		Cal. Water Code div. 7, § 13304	Not an ARAR	Section 13304 does not constitute an ARAR because it does not establish or contain substantive environmental "standards, requirements, criteria or limitations" (CERCLA 121) and is not in itself directive in intent. In addition, Section 13304 is not more stringent than the substantive requirements of potential state and federal ARARs identified in this Table Bnd Table B2-1.
Describes the water basins in the Colorado River Basin Region, establishes beneficial uses of groundwater and surface water, establishes WQOs, including narrative and numerical standards, establishes implementation plans to meet WQOs and protect beneficial uses, and incorporates statewide water quality control plans and policies.		Basin Plan (Cal. Water Code § 13240)	Applicable	Substantive requirements pertaining to beneficial uses, WQOs, and waste discharge requirements are potential state ARARs for the surface water and groundwater components of this response action.

(table continues)

Table B2-2 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Establishes the policy that high-quality waters of the state "shall be maintained to the maximum extent possible" consistent with the "maximum benefit to the people of the State." It provides that whenever the existing quality of water is better than that required by applicable water quality policies, such existing high-quality water will be maintained until it has been demonstrated to the state that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies. It also states that any activity that produces or may produce a waste or increased volume or concentration of waste and that discharges or proposes to discharge to existing high-quality waters will be required to meet waste-discharge requirements that will result in the best practicable treatment or control of the discharge.		Statement of Policy With Respect to Maintaining High Quality of Waters in California, SWRCB Res. 68-16 (SWRCB 1968)	Not an ARAR	SWRCB Res. 68-16 is not a chemical-specific ARAR for cleanup because the DON has determined that further migration of already contaminated groundwater is not a discharge governed by the language in SWRCB Res. 68-16. More specifically, the language of SWRCB Res. 68-16 indicates that it is prospective in intent, applying to new discharges in order to maintain existing high-quality waters. It is not intended to apply to restoration of waters that have already been degraded. Therefore, SWRCB Res. 68-16 is not an ARAR addressing response action goals for contaminants in groundwater.
Describes requirements for RWQCB oversight of investigation and cleanup and abatement activities resulting from discharges of hazardous substances. RWQCB may decide on cleanup and abatement goals and objectives for the protection of water quality and beneficial uses of water within each region. Establishes criteria for "containment zones" where cleanup to established water-quality goals is not economically or technically practicable.		Policies and procedures for investigation and cleanup and abatement of discharges under Cal. Water Code § 13304. SWRCB Res. 92-49 (SWRCB 1992)	Not an ARAR	The landfill is being monitored in compliance with the WDRs, and no discharge requiring cleanup and abatement has been reported.

(table continues)

Table B2-2 (continued)

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Incorporated into all regional board basin plans. Designates all groundwater and surface waters of the state as drinking water except where the TDS is greater than 3,000 ppm, the well yield is less than 200 gpd from a single well, the water is a geothermal resource or in a water conveyance facility, or the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.		SWRCB Res. 88-63 (Sources of Drinking Water Policy) (SWRCB 1988)	Not an ARAR	The groundwater at Site 1 does not meet the criteria for a drinking water source.
Sets concentration limits established for constituents of concern for monitoring points and identifies points of compliance.	Waste discharge requirements for NAF El Centro	RWQCB Order No. 99-010 (Waste Discharge Requirements)	Applicable	The substantive provisions of the WDRs pertinent to the proposed groundwater remedial action are potentially applicable ARARs.
Establishes concentration limits for cleanup actions, including groundwater, surface water, and the unsaturated zones for other than hazardous waste at background. Allows a higher cleanup limit (but not to exceed MCLs) if background is not technically or economically achievable.		Cal. Code Regs. tit. 27, §§ 20380(a); 20400(a), (c), (d), (e), and (g); and 20405	Not an ARAR	Not more stringent than federal regulations at Cal. Code Regs. tit. 22, § 66264.94. See Section A2.2.1.2 for additional discussion.

Notes:

[a] many potential action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables

[b] only the substantive provisions of the requirements cited in this Table Bre potential ARARs

[c] statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of specific citations are considered potential ARARs

(table continues)

Table B2-2 (continued)

Acronyms/Abbreviations:

ARAR – applicable or relevant and appropriate requirement
Cal. Code Regs. – *California Code of Regulations*
Cal-EPA – California Environmental Protection Agency
Cal. Water Code – California Water Code
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
div. – division
DON – Department of the Navy
gpd – gallons per day
MCL – maximum contaminant level
NAF – Naval Air Facility
NPDES – National Pollutant Discharge Elimination System
ppm – parts per million
RCRA – Resource Conservation and Recovery Act
Res. – Resolution
RWQCB – (California) Regional Water Quality Control Board
§ – section
SWRCB – (California) State Water Resources Control Board
TDS – total dissolved solids
tit. – title
WQO – water quality objective

Section B3
LOCATION-SPECIFIC ARARs

Potential location-specific ARARs are identified and discussed in this section. The discussions are presented based on various attributes of the site location, such as whether it is within a floodplain. Additional surveys will be performed in connection with the response action design and response action to confirm location-specific ARARs where inadequate siting information currently exists, or in the event of changes to planned facility locations.

B3.1 SUMMARY OF LOCATION-SPECIFIC ARARs

Cultural resources, wetlands protection, floodplain management, hydrologic resources, biological resources, coastal resources, other natural resources, and geologic characteristics are the categories of location-specific requirements potentially affected by the Site 1 proposed remedial alternatives. The conclusions for ARARs pertaining to these resources are presented in the following sections.

B3.1.1 Cultural Resources ARARs Conclusions

No cultural resources ARARs were identified for this site.

B3.1.2 Wetlands Protection and Floodplain Management Conclusions

No wetlands protection or floodplain management ARARs were identified for this site.

B3.1.3 Hydrologic Resources Conclusions

No hydrologic resources ARARs were identified for this site.

B3.1.4 Biological Resources Conclusions

The federal Endangered Species Act and Section 2080 of the California Fish & Game Code were identified as potentially applicable because an ecological scoping assessment identified the potential for two California species of special concern (burrowing owl and flat-tailed horned lizard) to use the site. The flat-tailed horned lizard has been proposed as a threatened species for inclusion on the federal threatened and endangered species list.

B3.1.5 Coastal Resources Conclusions

No coastal resources ARARs were identified for this site.

B3.1.6 Geologic Characteristics Conclusions

No ARARs addressing geologic characteristics were identified for this site.

B3.2 DETAILED DISCUSSION OF ARARs

The following subsections provide a detailed discussion of federal and state ARARs by location-specific resources. Pertinent and substantive provisions of the potential ARARs listed and described below were reviewed to determine whether they are potential federal or state ARARs for the Site 1 FS

Requirements that are determined to be ARARs or TBCs are identified in Table B3-1 (federal) and Table B3-2 (state) at the end of this section. ARARs determinations are presented in the column denoted by the heading ARAR Determination. Determinations of status for location-specific ARARs were generally based on consultation of maps or lists included in the regulation or prepared by the administering agency. References to the document or agency consulted are provided in the Comments column and may be provided in footnotes to the table. Specific issues concerning some of the requirements are discussed in the following sections.

B3.2.1 Cultural Resources ARARs

The following potential cultural resources ARARs were evaluated for this site:

- National Historic Preservation Act of 1966, as amended (16 U.S.C. §§ 470–470x-6, 36 C.F.R. pt. 800, 40 C.F.R. § 6.301[b])
- Archaeological and Historic Preservation Act (16 U.S.C. § 469–469c-1, 40 C.F.R. § 6.301[c])
- Historic Sites, Buildings, and Antiquities Act of 1935 (16 U.S.C. §§ 461–467, 40 C.F.R. § 6.301[a])
- Archaeological Resources Protection Act of 1979, as amended (Pub. L. 96-95, 16 U.S.C. § 470aa–470mm)

B3.2.1.1 NATIONAL HISTORIC PRESERVATION ACT OF 1966, AS AMENDED

Pursuant to Sections 106 and 110(f) of the National Historic Preservation Act (NHPA) (16 U.S.C. §§ 470–470x-6, and its implementing regulations [36 C.F.R. pt. 800]), as amended, CERCLA remedial actions are required to take into account the effects of remedial activities on any historic properties included on or eligible for inclusion on the National Register of Historic Places (National Register) (*http://tps.cr.nps.gov/nhl/result.cfm*). The National Register is a list of districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. Section 110(f) of the National Historic Preservation Act of 1966, as amended, requires that before approval of any federal undertaking that may directly and adversely affect any National Historic Landmark, the head of the responsible federal agency will, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to the landmark, and will afford the Advisory Council a reasonable opportunity to comment on the undertaking.

No buildings exist at or in the vicinity of Site 1. Therefore, the proposed remedial actions for Site 1 will not impact any site eligible for inclusion on the National Register.

B3.2.1.2 ARCHAEOLOGICAL AND HISTORIC PRESERVATION ACT

The Archaeological and Historic Preservation Act, 16 U.S.C. § 469–469c-1, provides for the preservation of historical and archaeological data that might otherwise be lost as a result of dam construction or alterations of the terrain. If activities in connection with any federal construction project or federally approved project may cause irreparable loss to significant scientific, prehistorical, or archaeological data, the act requires the agency undertaking that project to preserve the data or request the Department of the Interior (DOI) to do so. This act differs from the NHPA in that it encompasses a broader range of resources than those listed on the National Register and mandates only the preservation of the data (including analysis and publication).

Proposed remedial alternatives for Site 1 will not result in the loss of historical or archaeological data. An archeological survey previously performed in the vicinity of Site 1 did not identify any archeological sites.

B3.2.1.3 HISTORIC SITES, BUILDINGS, AND ANTIQUITIES ACT OF 1935

The purpose of the Historic Sites, Buildings, and Antiquities Act (16 U.S.C. §§ 461–467) and its implementing regulations (40 C.F.R. § 6.301[c]) is to encourage the long-term preservation of nationally significant properties that illustrate or commemorate the history and prehistory of the United States, including historic landmarks (36 C.F.R. § 65) and natural landmarks (36 C.F.R. § 62). Properties designated as National Historic Landmarks in California are listed in the National Register (*http://tps.cr.nps.gov/nhl/result.cfm*). Natural landmarks are nationally significant examples of a full range of ecological and geological features that constitute the nation's natural heritage. In conducting an environmental review of a proposed action, the responsible official shall consider the existence and location of natural landmarks using information provided by the National Park Service pursuant to 36 C.F.R. § 62.6(d) to avoid undesirable impacts on such landmarks. These requirements are not substantive and are not potential ARARs. However, if it is determined that areas to be disturbed during the response action are potentially eligible for the National Natural Historic Landmark Program, the State Historic Preservation Officer should be contacted.

There are no historic or natural landmarks in the vicinity of Site 1.

B3.2.1.4 ARCHAEOLOGICAL RESOURCES PROTECTION ACT OF 1979

Public Law (Pub. L. No.) 96-95 (16 U.S.C. § 470aa–470mm) was enacted in 1979 and amended in 1988 and applies to all lands to which the fee title is held by the United States. The purpose of this statute is to provide for the protection of archaeological resources on federal and Indian lands. The act prohibits unauthorized excavation, removal, damage, alteration, or defacement of archaeological resources located on public lands unless such activity is pursuant to a permit issued under Section 470cc.

The proposed remedial action alternatives will not result in the excavation, removal, damage, alteration, or defacement of archaeological resources. An archeological survey previously performed in the vicinity of Site 1 did not identify any archeological sites (KEA Environmental 1994).

B3.2.2 Wetlands Protection and Floodplains Management ARARs

Although there are no wetlands located at or in the vicinity of NAF El Centro, the following potential wetlands protection and floodplains management ARARs were evaluated:

- Executive Order (Exec. Order No.) 11990, Protection of Wetlands (40 C.F.R. § 6.302[a])
- Exec. Order No. 11988, Floodplain Management (40 C F R. § 6.302[b])
- Clean Water Act, §404, 33 U.S.C. § 1344
- RCRA (33 U S C. §§ 6901–6991[i]), Cal. Code Regs. tit. 22, § 66264 18(b)

B3.2.2.1 FEDERAL

Protection of Wetlands, Exec. Order No. 11990

Exec. Order No. 11990 requires that federal agencies minimize the destruction, loss, or degradation of wetlands; preserve and enhance the natural and beneficial value of wetlands; and avoid support of new construction in wetlands if a practicable alternative exists.

There are no wetlands located at or in the vicinity of NAF El Centro. Therefore, the proposed remedial action at Site 1 will not impact wetlands.

Floodplain Management, Exec. Order No. 11988

Under 40 C.F.R. § 6.302(b), federal agencies are required to evaluate the potential effects of action they may take in a floodplain to avoid, to the extent possible, adverse effects associated with direct and indirect development of a floodplain.

The requirements of actions taken within a floodplain address the potential impacts on floodplain beneficial use (flood control, water quality, and habitat) that could be affected by site remediation.

Proposed remedial alternatives for Site 1 will not impact a floodplain. There are no floodplains located at or in the vicinity of NAF El Centro.

Clean Water Act (33 U.S.C. § 1344)

Section 404 of the Clean Water Act of 1977 governs the discharge of dredged and fill material into waters of the United States, including adjacent wetlands. Wetlands are areas that are inundated by water frequently enough to support vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mudflats, natural ponds and similar

areas. Both the U.S. EPA and the U.S. Army Corps of Engineers have jurisdiction over wetlands. U.S. EPA's Section 404 guidelines are promulgated in 40 C.F.R. § 230, and the U.S. Army Corps of Engineer's guidelines are promulgated in 33 C.F.R. § 320.

There are no wetlands present at NAF El Centro and discharge of dredged or fill material to a wetland is not planned as part of the remedial action.

Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[i])

Under Cal. Code Regs. tit. 22, § 66264.18(b), any hazardous waste facility located in a 100-year floodplain or within the maximum high tide must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood or maximum high tide, unless the owner or operator can demonstrate that procedures are in effect that will cause the waste to be removed safely, before flood or tidewater can reach the facility.

The site is not located within a 100-year floodplain.

B3.2.2.2 STATE

The state RCRA requirements for floodplains are evaluated above as potential federal ARARs.

B3.2.3 Hydrologic Resources ARARs

The following potential federal hydrologic resources ARARs were evaluated:

- Wild and Scenic Rivers Act (substantive provisions of 16 U.S.C. §§ 1271–1287)
- Fish and Wildlife Coordination Act (substantive provisions of 16 U.S.C. §§ 661–666c)
- Rivers and Harbors Act of 1899 (substantive provisions of 33 U.S.C. §§ 401–413)

B3.2.3.1 WILD AND SCENIC RIVERS ACT

The Wild and Scenic Rivers Act (WSRA) (16 U.S.C. §§ 1271–1287) establishes requirements applicable to water resource projects affecting wild, scenic, or recreational rivers within the National Wild and Scenic Rivers System, as well as rivers designated on the National Rivers Inventory to be studied for inclusion on the national system. In accordance with Section 7 of the act, a federal agency may not assist, through grant, loan, license, or otherwise, the construction of a water resources project that would have a direct and adverse effect on the free-flowing, scenic, and natural values for which a river on the national system or a study river on the National Rivers Inventory was established. The act also covers indirect effects from construction of water resources projects below or above rivers or their tributaries that are in the national system or under study on the National Rivers Inventory, such as a dam on a tributary and construction or development on adjacent shorelines. Adverse impacts must be mitigated, and coordination may be required with the National Park Service and Department of Agriculture.

There are no wild, scenic, or recreational rivers present in the vicinity of Site 1. Therefore, the proposed remedial actions for Site 1 will not impact wild and scenic rivers.

B3.2.3.2 FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act (16 U.S.C. §§ 661–666c) was enacted to protect fish and wildlife when federal actions result in the control or structural modification of a natural stream or body of water. The statute requires federal agencies to take into consideration the effect a water-related project would have on fish and wildlife and take action to prevent loss or damage to these resources.

There are no natural streams or bodies of water present at Site 1. Therefore, the proposed remedial actions for Site 1 will not include the following types of actions:

- discharges of pollutants including industrial, mining, and municipal wastes, or dredge-and-fill material into a body of water or wetlands
- projects involving construction of dams, levees, impoundments, stream relocation, and water-diversion structures

B3.2.3.3 RIVERS AND HARBORS ACT OF 1899

Section 10 of the Rivers and Harbors Act of 1899 prohibits the creation of any obstruction not authorized by Congress to the navigable capacity of any of the waters of the United States (33 U.S.C. §§ 401–413). It prohibits construction of wharves, piers, booms, weirs, breakwaters, bulkheads, jetties, or other structures in a port unless the construction is approved by the U.S. Army Corps of Engineers. In addition, excavation or filling of any port, harbor, channel, lake, or any navigable water is prohibited without authorization. Section 10 permits are required for these activities. Section 10 permits cover construction, excavation, or deposition of materials in, over, or under navigable waters, or any work that would affect the course, location, condition, or capacity of those waters.

There are no navigable waters present in the vicinity of NAF El Centro. Therefore, the proposed remedial actions will not impact any navigable waters.

B3.2.4 Biological Resources ARARs

An ecological scoping assessment (BNI 1997) performed for Site 1 identified the potential for two California species of special concern (burrowing owl and flat-tailed horned lizard) to use the site. The flat-tailed horned lizard has been proposed as a threatened species for inclusion on the federal threatened and endangered species list. However, it is anticipated that the proposed remedial alternatives will not impact biological resources at NAF El Centro.

The following potential biological resources ARARs were evaluated:

- Endangered Species Act of 1973 (substantive provisions of 16 U.S.C. §§ 1531–1543)
- Migratory Bird Treaty Act of 1972 (substantive provisions of 16 U.S.C. §§ 703–712)

- Marine Mammal Protection Act (substantive provisions of 16 U.S.C. §§ 1361–1421h)
- Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801–1882)
- National Wildlife Refuge System Administration Act of 1996 (16 U.S.C. § 668dd–668ee, substantive provisions of 50 C.F.R. § 27.11–27.97)
- Wilderness Act (16 U.S.C. §§ 1131–1136, 50 C.F.R. § 35.1–35.14)
- California Endangered Species Act (Cal. Fish & Game Code, ch. 1.5, §§ 2050–2116)

B3.2.4.1 FEDERAL

Endangered Species Act of 1973

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531–1543) provides a means for conserving various species of fish, wildlife, and plants that are threatened with extinction. The ESA defines an endangered species and provides for the designation of critical habitats. Federal agencies may not jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat. Under Section 7(a) of the ESA, federal agencies must carry out conservation programs for listed species. The Endangered Species Committee may grant an exemption for agency action if reasonable mitigation and enhancement measures such as propagation, transplantation, and habitat acquisition and improvement are implemented. Consultation regulations at 50 C.F.R. § 402 are administrative in nature and are therefore not ARARs. However, they may be TBCs to comply with the substantive provisions of the ESA.

The ESA has been identified as potentially applicable because an ecological scoping assessment identified the potential for two California species of special concern (burrowing owl and flat-tailed horned lizard) to use the site (BNI 1997). The flat-tailed horned lizard has been proposed as a threatened species for inclusion on the federal threatened and endangered species list. Ditch lining activities will be coordinated with the wildlife biologist at NAF El Centro to ensure activities will not impact any endangered species. Lining of the ditch is the only proposed remedial alternative that would require any construction activity, and this activity is limited to an area immediately north of Site 1 where endangered species are not present.

Migratory Bird Treaty Act of 1972

The Migratory Bird Treaty Act (16 U.S.C. §§ 703–712) prohibits at any time, using any means or manner, the pursuit, hunting, capturing, and killing or attempting to take, capture, or kill any migratory bird. This act also prohibits the possession, sale, export, and import of any migratory bird or any part of a migratory bird, as well as nests and eggs. A list of migratory birds for which this requirement applies is found at 50 C.F.R. § 10.13.

The ecological scoping assessment did not indicate the presence of migratory birds at Site 1. Therefore, the proposed action alternatives for Site 1 will not impact migratory birds.

Marine Mammal Protection Act

The Marine Mammal Protection Act (16 U.S.C. §§ 1361–1421h) prohibits the taking of a marine mammal on the high seas or in a harbor or other place under the jurisdiction of the United States. It prohibits the possession, transport, and sale of a mammal or marine mammal product, unless authorized under law. The prohibitions that are potentially pertinent to CERCLA actions are at 16 U.S.C. § 1372(a)(2).

This site is not located in or near a coastal area.

Magnuson-Stevens Fishery Conservation and Management Act of 1976, as Amended

The purpose of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. §§ 1801–1882) is to conserve and manage the fishery resources found off the coasts of the United States, the anadromous species, and the continental shelf fishery resources of the United States It establishes a fishery conservation zone within which the United States has exclusive fishery management prerogatives.

This site is not located in or near a coastal area.

National Wildlife Refuge System Administration Act of 1966

The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd–668ee) and its implementing regulations at 50 C.F.R. §§ 25–37 establish wildlife refuges that are maintained for the primary purpose of developing a national program of wildlife and ecological conservation and rehabilitation. These refuges are established for the restoration, preservation, development, and management of wildlife and wild land habitats; protection and preservation of endangered or threatened species and their habitats; and management of wildlife and wild lands to obtain the maximum benefit from these resources.

The National Wildlife Refuge System Administration Act contains the following substantive requirements that are potential ARARs. The act prohibits any person from disturbing, injuring, cutting, burning, removing, destroying, or possessing any property within any area of a wildlife refuge. The act also prohibits the taking or possessing of any fish, bird, mammal or other wild vertebrate or invertebrate animals, or nest or eggs within any refuge area or otherwise occupying any such area unless such activities are done with a permit or permitted by express provision of law. The act also regulates the use of audio equipment as well as motorized vehicles, aircraft, and boats in wildlife refuges. It prohibits construction activities, disposal of waste, and the introduction of plants and animals into any wildlife refuge. The prohibitions under the act are codified at 50 C.F.R. § 27.

NAF El Centro is not designated as part of the National Wildlife Refuge System.

Wilderness Act

The Wilderness Act (16 U.S.C. § 1131) and its accompanying implementing regulations (50 C.F.R. § 35.1–35.14) create the National Wilderness Preservation System. The intent of the law is to administer and manage units of this system (i.e., wilderness areas) in order to preserve their wilderness character and to leave them unimpaired for future use as wilderness.

Site 1 is not located in a federally owned wilderness area. Therefore, the proposed remedial actions will not impact wilderness areas.

B3.2.4.2 STATE

California Endangered Species Act

Substantive provisions of the California Endangered Species Act, set forth in the Cal. Fish & Game Code §§ 2050–2068, 2070, 2080, and 2090–2096, have been identified previously by the state as potential state ARARs. However, §§ 2050–2068 and 2070 were determined to be procedural and nonsubstantive, and §§ 2090–2096 are not effective after 01 January 1994. Cal. Fish & Game Code § 2080 prohibits the taking of endangered species.

The list of plants and animals of California declared to be endangered are found in Cal. Code Regs. tit. 14, §§ 670.2 and 670.5. These requirements are not a "cleanup standard, standard of control," or "other substantive requirement, criteria, or limitation" (CERCLA § 121, 42 U.S.C. § 9621). Therefore, Cal. Code Regs. tit. 14, §§ 670.2 and 670.5 are not potential ARARs. The lists are incorporated by reference into other potential state ARARs (e.g., Cal. Fish & Game Code § 2080).

An ecological scoping assessment (BNI 1997) performed for Site 1 identified the potential for two California species of special concern (burrowing owl and flat-tailed horned lizard) to use the site. The flat-tailed horned lizard has been proposed as a threatened species for inclusion on the federal threatened and endangered species list. Therefore, the substantive provisions of Cal. Fish & Game Code § 2080 are potential ARARs for the proposed response action. Ditch lining activities will be coordinated with the wildlife biologist at NAF El Centro to ensure activities will not impact any endangered species. Lining of the ditch is the only proposed remedial alternative that would require any construction activity, and this activity is limited to an area immediately north of Site 1 where endangered species are not present.

B3.2.5 Coastal Resources ARARs

Though there are no coastal resources located at or in the vicinity of NAF El Centro, the following potential coastal resources ARARs were evaluated:

- Coastal Zone Management Act (substantive provisions of 16 U.S.C. §§ 1451–1464, 15 C.F.R. § 930)
- California Coastal Act of 1976 (Cal. Pub. Res. Code §§ 30000–30900; Cal. Code Regs. tit. 14, §§ 13001–13666.4)

B3.2.5.1 FEDERAL

Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451–1464) and the accompanying implementing regulations in 15 C.F.R. § 930 require that federal agencies conducting or supporting activities directly affecting the coastal zone conduct or support those activities in a manner that is consistent with the approved state coastal zone management programs. A state coastal zone management program (developed under state law and guided by the CZMA) sets forth objectives, policies, and standards to guide public and private uses of lands and water in the coastal zone.

NAF El Centro is not located in or near a coastal zone.

B3.2.5.2 STATE

California Coastal Act of 1976

The Public Resources Code (Cal. Pub. Res. Code §§ 30000–30900) and Cal. Code Regs. tit. 14, §§ 13001–13666.4 regulate activities associated with development to control direct significant impacts on coastal waters and to protect state and national interests in California coastal resources. The California Coastal Act policies set forth in the act constitute the standards used by the California Coastal Commission in its coastal development permit decisions and for the review of local coastal programs. These policies contain the following substantive requirements: protection and expansion of public access to the shoreline and recreation opportunities (Cal. Pub. Res. Code §§ 30210–30224); protection, enhancement and restoration of environmentally sensitive habitats including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, grasslands, streams, lakes, and habitat for rare or endangered plants or animals (Cal. Pub. Res. Code §§ 30230–30240), protection of productive agricultural lands, commercial fisheries, and archaeological resources (Cal. Pub. Res. Code §§ 30234, 30241–30244), protection of the scenic beauty of coastal landscapes (Cal. Pub. Res. Code § 30251), and provisions for expansion, in an environmentally sound manner, of existing industrial ports and electricity-generating power plants (Cal. Pub. Res. Code § 30264).

Proposed remedial alternatives for Site 1 will not impact coastal water.

B3.2.6 Geologic Characteristics ARARs

RCRA (42 U.S.C. §§ 6901–6991[I]), hazardous waste facility siting criteria, Cal. Code Regs. tit. 22, §§ 66264.18(a) and (c)] was evaluated as a potential geologic ARAR.

B3.2.6.1 FEDERAL

Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[i])

Hazardous waste facilities must be sited in accordance with the following requirements.

- Seismic considerations (Cal. Code Regs. tit. 22, § 66264.18(a) – portions of new facilities or facilities undergoing substantial modification where transfer,

treatment, storage or disposal of hazardous waste will be conducted shall not be located within 61 meters (200 feet) of a fault which has had displacement in Holocene time.

- Salt dome formations, salt bed formations, underground mines and caves (Cal. Code Regs. tit. 22, § 66264.18[c]) – the placement of any noncontainerized or bulk liquid hazardous waste in any salt dome formation, salt bed formation, or underground mine or cave is prohibited.

Site 1 is not located within 61 meters of a Holocene fault and no discharge is proposed to a salt dome formation, salt bed formation, or underground mines or caves. Therefore, the requirements at Cal Code Regs. tit. 22, § 66264.18(a) and § 66264.18(c) are not potential ARARs for this remedial action.

B3.2.6.2 STATE

The state location-specific RCRA requirements for geologic characteristics are evaluated above as potential federal ARARs.

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Table B3-1
Potential Federal Location-Specific ARARs

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
National Historic Preservation Act of 1966, as Amended (16 U.S.C. § 470–470x-6)[b]					
Historic project owned or controlled by federal agency	Action to preserve historic properties; planning of action to minimize harm to properties listed on or eligible for listing on the National Register of Historic Places.	Property included in or eligible for the National Register of Historic Places.	16 U.S.C. § 470–470x-6 36 C.F.R. pt. 800 40 C.F.R. § 6.301(b)	Not an ARAR	The area to be disturbed during the remedial action at Site 1 is not known to be eligible for the National Register of Historic Places. No buildings exist at the site.
Archaeological and Historic Preservation Act (16 U.S.C. § 469–469c-1)[b]					
Within area where action may cause irreparable harm, loss, or destruction of significant artifacts	Construction on previously undisturbed land would require an archaeological survey of the area. Data recovery and preservation would be required if significant archaeological or historical data were found on-site. The responsible official or Secretary of the Interior is authorized to undertake data recovery and preservation.	Regulated alteration of terrain caused as a result of a federal construction project or federally licensed activity or program where action may cause irreparable harm, loss, or destruction of significant artifacts.	16 U.S.C. § 469–469c-1 40 C.F.R. § 6.301(c)	Not an ARAR	An archaeological survey previously performed in the vicinity of Site 1 did not identify any archaeological sites near the site.
Historic Sites, Buildings, and Antiquities Act of 1935 (16 U.S.C. §§ 461–467)[b]					
Historic sites	Avoid undesirable impacts on landmarks.	Areas designated as historic sites.	16 U.S.C. §§ 461–467 40 C.F.R. § 6.301(a)	Not an ARAR	The area to be disturbed during the remedial action at Site 1 is not known to be eligible for the National Register of Historic Places. No buildings exist at the site.

(table continues)

Table B3-1 (continued)

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Archaeological Resources Protection Act of 1979, as Amended (16 U.S.C. § 470aa–470mm)[b]					
Archaeological resources on federal land	Prohibits unauthorized excavation, removal, damage, alteration, or defacement of archaeological resources located on public lands unless such action is conducted pursuant to a permit.	Archaeological resources on federal land.	Pub. L. No. 96-95 16 U.S.C. § 470aa–470mm	Not an ARAR	An archaeological survey previously performed in the vicinity of Site 1 did not identify any archaeological sites near the site.
Exec. Order No. 11990, Protection of Wetlands[b]					
Wetland	Action to minimize the destruction, loss, or degradation of wetlands.	Wetland meeting definition of Section 7.	40 C.F.R. § 6.302(a)	Not an ARAR	There are no wetlands in the immediate vicinity of Site 1, and remedial action is intended to prevent discharge to surface water.
Exec. Order No. 11988, Floodplain Management[b]					
Within floodplain	Actions taken should avoid adverse effects, minimize potential harm, restore and preserve natural and beneficial values.	Action that will occur in a floodplain (i.e., lowlands) and relatively flat areas adjoining inland and coastal waters and other flood-prone areas.	40 C.F.R. § 6.302(b) 40 C.F.R. pt. 6, Appendix A	Relevant and appropriate	Site 1 is not located within the 100-year floodplain of the New River but is in a flat area near the river.
Clean Water Act of 1977, as Amended, Section 404 (33 U.S.C. § 1344)[b]					
Wetland	Action to prohibit discharge of dredged or fill material into wetland without permit.	Wetland as defined by Exec. Order No. 11990 Section 7.	33 U.S.C. § 1344	Not an ARAR	No discharge of dredged or fill material to a wetland is planned as part of the remedial action at Site 1.

(table continues)

Table B3-1 (continued)

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[i])[b]					
Within 100-year floodplain	Facility must be designed, constructed, operated, and maintained to avoid washout.	RCRA hazardous waste; treatment, storage, or disposal of hazardous waste.	Cal. Code Regs. tit. 22, § 66264.18(b)	Not an ARAR	Remedial action alternatives do not involve construction of a new hazardous waste TSD facility. Site 1 is not located within the 100-year floodplain.
Wild and Scenic Rivers Act (16 U.S.C. §§ 1271–1287)[b]					
Within area affecting national wild, scenic, or recreational river	Avoid taking or assisting in action that will have direct adverse effect on scenic river.	Activities that affect or may affect any of the rivers specified in 16 U.S.C. §1276(a).	16 U.S.C. §§ 1271–1287	Not an ARAR	This remedial action does not impact wild, scenic, or recreational rivers. There are no such rivers in the vicinity of Site 1.
Fish and Wildlife Coordination Act (16 U.S.C. §§ 661–666c)[b]					
Area affecting stream or other water body	Action taken should protect fish or wildlife.	Diversion, channeling, or other activity that modifies a stream or other water body and affects fish or wildlife.	16 U.S.C. § 662	Not an ARAR	This remedial action does not modify a stream or other water body and does not affect fish or wildlife.
Rivers and Harbors Act of 1899 (33 U.S.C. §§ 401–413)[b]					
Navigable waters	Permits required for structures or work in or affecting navigable waters.	Activities affecting navigable waters.	33 U.S.C. § 403 33 C.F.R. § 322	Not an ARAR	Remedial action at Site 1 will not affect navigable waters. No navigable waters are present.

(table continues)

Table B3-1 (continued)

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Endangered Species Act of 1973 (16 U.S.C. §§ 1531–1543)[b]					
Habitat upon which endangered species or threatened species depend	Federal agencies may not jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat. The Endangered Species Committee may grant an exemption for agency action if reasonable mitigation and enhancement measures such as propagation, transplantation, and habitat acquisition and improvement are implemented.	Determination of effect upon endangered or threatened species or its habitat. Critical habitat upon which endangered species or threatened species depend.	16 U.S.C. § 1536(a), (h)(1)(B)	Applicable	Applicable because the ecological scoping assessment conducted for Site 1 indicates that proposed endangered species have the potential to use the site.
Migratory Bird Treaty Act of 1972 (16 U.S.C. §§ 703–712)[b]					
Migratory bird area	Protects almost all species of native migratory birds in the U.S. from unregulated "take," which can include poisoning at hazardous waste sites.	Presence of migratory birds.	16 U.S.C. § 703	Not an ARAR	The ecological scoping assessment did not indicate the presence of migratory birds at Site 1.
Marine Mammal Protection Act (16 U.S.C. §§ 1361–1421h)[b]					
Marine mammal area	Protects any marine mammal in the U.S. except as provided by international treaties from unregulated "take."	Presence of marine mammals.	16 U.S.C. § 1372(a)(2)	Not an ARAR	Site 1 is located inland; therefore, marine mammals are not present.

(table continues)

Table B3-1 (continued)

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Magnuson-Stevens Fishery Conservation and Management Act of 1976, as Amended (16 U.S.C. §§ 1801–1882)[b]					
Fishery under management	Provides for conservation and management of specified fisheries within specified fishery conservation zones.	Presence of managed fisheries.	16 U.S.C. §§ 1801–1882	Not an ARAR	Site 1 is located inland and, therefore, is not within a specified fishery conservation zone.
National Wildlife Refuge System Administration Act of 1996 (16 U.S.C. § 668dd–668ee)[b]					
Wildlife refuge	No person shall take any animal or plant on any national wildlife refuge, except as authorized under 50 C.F.R. § 27.51. The disposing or dumping of wastes is prohibited.	Area designated as part of National Wildlife Refuge System.	16 U.S.C § 668dd–668ee Substantive provisions of 50 C.F.R. § 27.11–27.97	Not an ARAR	Site 1 is not part of the National Wildlife Refuge System.
Wilderness Act (16 U.S.C. §§ 1131–1136)[b]					
Wilderness area	Area must be administered in such a manner as will leave it unimpaired as wilderness and preserve its wilderness character.	Federally owned area designated as wilderness area.	16 U.S.C. §§ 1131–1136 50 C.F.R. §§ 35.1–35.14	Not an ARAR	Site 1 is not located in a federally owned wilderness area.
Coastal Zone Management Act (16 U.S.C. §§ 1451–1464)[b]					
Within coastal zone	Conduct activities in a manner consistent with approved state management programs.	Activities affecting the coastal zone including lands thereunder and adjacent shore land.	16 U.S.C. § 1456(c) 15 C.F.R. § 930	Not an ARAR	Site 1 is not near a coastal area.

(table continues)

Table B3-1 (continued)

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[i])[b]					
Within 61 meters (200 feet) of a fault displaced in Holocene time	New treatment, storage, or disposal of hazardous waste prohibited.	RCRA hazardous waste; treatment, storage, or disposal of hazardous waste.	Cal. Code Regs. tit. 22, § 66264.18(a)	Not an ARAR	Remedial action does not involve construction of a new hazardous waste treatment storage or disposal facility and Site 1 is not located within 61 meters of a fault displaced in Holocene time.
Within salt dome formation, underground mine, or cave	Placement of noncontainerized or bulk liquid hazardous waste prohibited.	RCRA hazardous waste; placement.	Cal. Code Regs. tit. 22, § 66264.18(c)	Not an ARAR	Site 1 does not contain any known salt domes, underground mines, or caves. Also, the remedial action does not involve placement of noncontainerized or bulk, liquid hazardous waste in salt domes or underground mines or caves.

Notes:

[a] only the substantive provisions of the requirements cited in this Table Bre potential ARARs

[b] statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered potential ARARs

Acronyms/Abbreviations:

ARAR – applicable or relevant and appropriate requirement
Cal. Code Regs. – *California Code of Regulations*
C.F.R. – *Code of Federal Regulations*
DON – Department of the Navy
Exec. Order No. – executive order number
Pub. L. No. – public law number
RCRA – Resource Conservation and Recovery Act
§ – section
tit. – title
U.S. – United States
U.S.C. – *United States Code*

Table B3-2
Potential State Location-Specific ARARs

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
California Endangered Species Act (Cal. Fish & Game Code §§ 2050–2116)[b]					
Endangered species habitat	Department policy and legislative findings and definitions for significant natural areas.	Activity taking place in an endangered species habitat and significant natural area.	Cal. Fish & Game Code §§ 2050–2068	Not an ARAR	Procedural; not a "cleanup standard, standard of control," or "other substantive requirement, criteria, or limitation."
Endangered species habitat	Procedures for listing endangered species.	Threatened or endangered species determination.	Cal. Fish & Game Code § 2070	Not an ARAR	Procedural; not a "cleanup standard, standard of control," or "other substantive requirement, criteria, or limitation."
Endangered species habitat	No person shall import, export, take, possess, or sell any endangered or threatened species or part or product thereof.	Threatened or endangered species determination on or before 01 January 1985 or a candidate species with proper notification.	Cal. Fish & Game Code § 2080	Applicable	The ecological scoping assessment identified potential for two California species of special concern to use the site. One of these species (the flat-tailed horned lizard) has been proposed as a threatened species for inclusion on the federal threatened and endangered species list.
Endangered species habitat	Ensures that action taken will not jeopardize the survival and reproduction of any threatened or endangered species.	Threatened or endangered species determination or a candidate species with proper notification.	Cal. Fish & Game Code §§ 2090–2096	Not an ARAR	Not effective after 01 January 1994.

(table continues)

Table B3-2 (continued)

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
California Coastal Act of 1976[b]					
Coast	Regulates activities associated with development to control direct significant impacts on coastal waters and to protect state and national interests in California coastal resources.	Any activity which could impact coastal waters and resources.	Cal. Pub. Res. Code §§ 30000–30900; Cal. Code Regs. tit. 14, §§ 13001–13666.4	Not an ARAR	The site is not located within a coastal zone.

Notes:

[a] only the substantive provisions of the requirements cited in this Table Bre potential ARARs

[b] statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs follow each general heading; only substantive requirements of the specific citations are considered potential ARARs

Acronyms/Abbreviations:

ARAR – applicable or relevant and appropriate requirement
Cal. Code Regs. – *California Code of Regulations*
Cal. Fish & Game Code – California Fish and Game Code
Cal. Pub. Res. Code – California Public Resources Code
DON – Department of the Navy
§ – section
tit. – title

Section B4
ACTION-SPECIFIC ARARs

Potential action-specific ARARs, based on the three remedial action alternatives retained for detailed analysis for Site 1, are identified and discussed in this section. Alternative 1 involves no action with continued groundwater monitoring; Alternative 2 entails continued groundwater monitoring and restrictions on field irrigation; and Alternative 3 entails continued groundwater monitoring, ditch lining, and restrictions on field irrigation. Detailed descriptions of the remedial alternatives are provided in the main text of this FS.

Tables B4-1 and B4-2 at the end of this section present and evaluate federal and state potential action-specific ARARs for Site 1, respectively. A discussion of the requirements determined to be pertinent to each alternative being evaluated for Site 1 action is presented in this section. A discussion of how the alternative complies with each identified ARAR is also provided.

B4.1 ALTERNATIVE 1 – NO ACTION

There is no need to identify ARARs for the no action alternative because ARARs apply to "any removal or remedial action conducted entirely on-site" and "no action" is not a removal or remedial action (CERCLA Section 121(e), 42 U.S.C. § 9621[e]). CERCLA § 121 (42 U.S.C. § 9621) cleanup standards for selection of a Superfund remedy, including the requirement to meet ARARs, are not triggered by the no action alternative (U.S. EPA 1991b). Therefore, a discussion of compliance with action-specific ARARs is not appropriate for this alternative.

B4.2 ALTERNATIVE 2 – CONTINUED GROUNDWATER MONITORING AND RESTRICTIONS ON FIELD IRRIGATION

Permanent restrictions on irrigation near the site would be used to maintain groundwater levels below the bottom of landfill waste and below the bottom of the unlined drainage ditch. Historical groundwater elevation monitoring (Section 1.2.3 of the FS) has demonstrated that such restrictions are effective at controlling site groundwater levels. No ARARs were identified for the irrigation restrictions. The restrictions will be incorporated into the Base Master Plan. A long-term groundwater monitoring and reporting program was instituted for this site in March 1999. This program will remain in place under this alternative.

B4.2.1 Federal – RCRA Hazardous Waste Requirements

Federal laws that give rise to potential ARARs for this proposed remedial alternative include the following RCRA hazardous waste requirements.

Site 1 is not classified as a hazardous waste landfill because there is no record of hazardous waste disposal. In addition, proposed remedial alternatives would not constitute placement or disposal under RCRA and, therefore, the generator and accumulation requirements for hazardous waste contained in Cal. Code Regs. tit. 22, §§ 66262.10(a), 66262.11, and 66264.13(a) and (b) are not triggered and, therefore, not directly applicable. However, in the event that a hazardous waste is generated during implementation of the proposed remedial alternatives (such as dirt from ditch lining or

wastewater from groundwater monitoring well sampling), the DON intends to comply with these requirements; therefore, they have been identified as potentially applicable.

B4.2.2 State ARARs

The following sections evaluate the potential state ARARs for continued groundwater monitoring and restricting irrigation near the landfill. No state requirements have been identified for land use restrictions. The irrigation restrictions will be included in an amendment to the Base Master Plan.

B4.2.2.1 COMPREHENSIVE WATER QUALITY CONTROL PLAN FOR THE COLORADO RIVER BASIN

The pertinent substantive provisions of the Basin Plan are potentially applicable state action-specific ARARs for this proposed remedial alternative. The DON accepts the substantive provisions of the Basin Plan that address beneficial use, WQOs, and waste discharge requirements as potential ARARs. The beneficial uses designated for the Colorado River Basin are potential ARARs for this FS. The alternative would comply with RWQCB requirements to maintain beneficial uses and meet water quality objectives for the shallow groundwater system underlying NAF El Centro.

Shallow groundwater at NAF El Centro is part of the Imperial Hydrogeologic Unit. Beneficial groundwater uses for the Imperial Hydrogeologic Unit listed in the Basin Plan include municipal and industrial usage. However, groundwater quality in the surficial aquifer in the immediate vicinity of NAF El Centro does not meet the criteria provided in SWRCB Res. 88-63 for a potential source of drinking water because of the high salinity and low aquifer yields. In a letter dated 30 June 1998, RWQCB stated that the upper aquifer at NAF El Centro currently has no known beneficial use due to low aquifer yield and poor quality of the groundwater (TDS commonly in excess of 3,000 mg/L) (Stormo, pers. com. 1998). In addition, the RWQCB has issued WDRs for the site in compliance with the Basin Plan and have determined that the groundwater beneath the site is not a source of drinking water.

B4.2.2.2 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD ORDER NO. 99-010

RWQCB Order No. 99-010 sets forth the Waste Discharge Requirements for the Site 1 landfill at NAF El Centro and has been identified as a potentially applicable ARAR. Pursuant to Specification No. 6 of Order No. 99-010, NAF El Centro is required to implement the Monitoring and Reporting Program No. 99-010. The substantive requirements of Order No. 99-010 pertinent to groundwater have hence been identified as potentially applicable to this proposed remedial alternative. The WDRs included in the order have been developed in compliance with all the state requirements identified as potential ARARs for the proposed remedial actions. WDRs for Site 1 are included in Appendix A.

B4.2.2.3 TITLE 27 OF THE CALIFORNIA CODE OF REGULATIONS

This FS does not directly address landfill closure and postclosure requirements. The landfill capping and closure requirements were addressed in the AM/RAW. In addition, actions that address other than those proposed, such as capping or covering the landfill, are not components of the proposed remedial alternatives for Site 1. Instead, this FS is limited to addressing the groundwater aspects of the landfill that were not addressed in the AM/RAW. Therefore, the Cal. Code Regs. tit. 27 sections that address groundwater monitoring are included in this ARARs evaluation.

The detection monitoring requirements found in Cal Code Regs. tit. 27, § 20385(a)(1) and (a)(2) apply to discharges of waste to land after 18 July 1997. Section 20420 provides the minimum requirements for a detection monitoring program. These monitoring requirements are for the detection of potential contaminants that may lead to further evaluation and corrective action monitoring. The substantive provisions of these requirements pertinent to groundwater monitoring are potentially applicable ARARs for the proposed remedial actions, including groundwater monitoring. These requirements are included in the WDRs for the landfill at Site 1 (Order No. 99-010).

B4.3 ALTERNATIVE 3 – CONTINUED GROUNDWATER MONITORING, DITCH LINING, AND RESTRICTIONS ON FIELD IRRIGATION

Components of Alternative 3 that trigger ARARs are groundwater monitoring and lining of the ditch. No ARARs were identified for the irrigation restrictions. Permanent restrictions on field irrigation near the site would be used to maintain groundwater levels below the bottom of the landfill waste and below the bottom of the unlined drainage ditch. Historical groundwater elevation monitoring (Section 1.2.3 of the FS) has demonstrated that such restrictions are effective at controlling site groundwater levels. Lining of the drainage ditch north of the site would eliminate a potential migration pathway between contaminated groundwater and surface water. This pathway would only be completed if groundwater levels were increased to the level of the bottom of the drainage ditch. The lining would also prevent surface water from the ditch from permeating the groundwater table. A long-term groundwater monitoring and reporting program was instituted for this site in March 1999. This program will remain in place under this alternative.

ARARs associated with ditch lining are limited to federal RCRA requirements for hazardous wastes as identified for Alternative 2.

Lining of the ditch may generate dust and Imperial County Air Pollution Control District (ICAPCD) requirements are potentially applicable ARARs.

ICAPCD Rules 216, 401, and 403 were evaluated as potential state ARARs for the potential air emissions at Site 1. These are not potential federal ARARs because they are not included in the State Implementation Plan.

ICAPCD Rule 216, "Construction or Reconstruction of Major Stationary Sources that Emit Hazardous Air Pollutants," states that owners and operators of stationary sources that emit hazardous air pollutants must install best available control technology for toxics

to any constructed or reconstructed major source. These requirements apply to emissions of hazardous air pollutants from construction or reconstruction of major stationary sources. Because the proposed remedial alternative does not involve a major stationary source, but the activities are similar to those addressed in the requirement, this ARAR has been identified as potentially relevant and appropriate.

ICAPCD Rule 401, "Opacity of Emissions," prohibits the release or discharge into the atmosphere, from any single source of emission whatsoever, any air contaminant that meets the specifications set forth in the regulation other than uncombined water vapor, for a period or periods aggregating more than 3 minutes in any hour. This requirement applies to the discharge of any pollutant, and has also been identified as potentially applicable to the proposed remedial alternatives at Site 1.

Finally, ICAPCD Rule 403, "General Limitations on the Discharge of Air Contaminants," sets forth discharge limitations from any single emissions unit for particulate matter. This requirement has also been identified as potentially applicable.

Table B4-1
Potential Federal Action-Specific ARARs

2 – Continued groundwater monitoring and restrictions on field watering; 3 – Continued groundwater monitoring, ditch lining, and restrictions on field irrigating.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	RA	TBC	Comments
Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[i])*							
On-site waste generation	Person who generates waste shall determine if that waste is a hazardous waste.	Generator of waste.	Cal. Code Regs. tit. 22, § 66262.10(a), 66262.11	2, 3			It is not anticipated that solid waste will be generated as a result of the proposed remedial alternatives. However, in the event that it is, the substantive requirements of the cited sections would be applicable for waste characterization.
	Requirements for analyzing waste for determining whether waste is hazardous.	Generator of waste.	Cal. Code Regs. tit. 22, § 66264.13(a) and (b)	2, 3			It is not anticipated that solid waste will be generated as a result of the proposed remedial alternatives. However, in the event that it is, the substantive requirements of the cited sections would be applicable for waste characterization.
Clean Air Act (42 U.S.C. §§ 7401–7671)*							
Discharge to air	Provisions of SIP approved by U.S. EPA under Section 110 of CAA.	Major sources of air pollutants.	40 U.S.C. § 7410; portions of 40 C.F.R. § 52.220	3			Not an ARAR. Substantive requirements of Imperial Valley APCD rules that have been approved by U.S. EPA as part of the SIP under the CAA are potential federal ARARs for air emissions (CAA Section 110). However, the remedial actions proposed for the site do not have the potential for emissions addressed by the regulations.

Note:

* statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of specific citations are considered potential ARARs

(table continues)

Table B4-1 (continued)

Acronyms/Abbreviations:
A – applicable
APCD – Air Pollution Control District
ARAR – applicable or relevant and appropriate requirement
CAA – Clean Air Act
Cal. Code Regs. – *California Code of Regulations*
C.F.R. – *Code of Federal Regulations*
DON – Department of the Navy
RA – relevant and appropriate
§ – section
SIP – State Implementation Plan
TBC – to be considered
tit. – title
U.S.C. – *United States Code*
U.S. EPA – United States Environmental Protection Agency

Table B4-2
Potential State Action-Specific ARARs

2 – Continued groundwater monitoring and restrictions on field irrigation; 3 – Continued groundwater monitoring, ditch lining, and restrictions on field irrigation.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	RA	TBC	Comments
State Water Resources Control Board and Regional Water Quality Control Board*							
Actions affecting water quality	Authorizes the SWRCB and RWQCB to establish in Water Quality Control Plans beneficial uses and numerical and narrative standards to protect both surface water and groundwater quality. Authorizes regional water boards to issue permits for discharges to land or surface water or groundwater that could affect water quality, including NPDES permits, and to take enforcement action to protect water quality.		Cal. Water Code, div. 7, §§ 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Act); other provisions are not ARARs	2, 3			Substantive provisions of §§ 13241, 13243, 13263(a), 13269, and 13360 as implemented through the beneficial uses, water quality objectives, and waste discharge requirements of the Basin Plan are ARARs for this action. This includes substantive requirements contained in permits, but not the permits themselves.
	Describes the water basins in the Colorado River Basin, establishes beneficial uses of surface water and groundwater, establishes water quality objectives, including narrative and numerical standards, establishes implementation plans to meet water quality objectives and protect beneficial uses, and incorporates statewide water quality control plans and policies.		Basin Plan	2, 3			The substantive requirements pertaining to beneficial uses, water quality objectives, and certain statewide water quality control plans are potential state ARARs for the groundwater components of the proposed remedial alternatives for NAF El Centro.

(table continues)

Table B4-2 (continued)

2 – Continued groundwater monitoring and restrictions on field irrigation; 3 – Continued groundwater monitoring, ditch lining, and restrictions on field irrigation.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	RA	TBC	Comments
Discharges to high-quality waters	Incorporated into all Regional Board Basin Plans. Requires that quality of waters of the state that is better than needed to protect all beneficial uses be maintained unless certain findings are made. Discharges to high quality waters must be treated using best practicable treatment or control necessary to prevent pollution or nuisance and to maintain the highest quality water. Requires cleanup to background water quality or to lowest concentrations technically and economically feasible to achieve. Beneficial uses must, at least, be protected.		SWRCB Res. 68-16 (Policy With Respect to Maintaining High Quality of Waters in California) (Cal. Water Code § 13140, CWA regulations 40 C.F.R. § 131.12)				Not an ARAR. Discharge to groundwater is not part of the remedial alternatives. Monitoring in accordance with the WDRs (Order No. 99-010) has not resulted in discharges from the site.
Actions affecting water quality	Provides water quality criteria for classifying the beneficial use of groundwater as municipal/domestic. Criteria outlined as follows: total dissolved solids ≤ 3,000 mg/L or yielding 200 gallons per day or serving as a public water system.	Applies in determining beneficial uses for waters that may be affected by discharges of waste.	SWRCB Res. 88-63 ("Sources of Drinking Water Policy") (as contained in the Basin Plans)				Not an ARAR. The groundwater at the site does not meet the criteria for a potential source of drinking water. In addition, there are no surface water drinking water sources that could be impacted by proposed remedial alternatives.
	Establishes policies and procedures for the oversight of investigations and cleanup and abatement activities resulting from discharges of waste which affect or threaten water quality. Requires cleanup of all waste discharged and restoration of affected water to background conditions. Requires actions for cleanup and abatement to conform to Res. 68-16 and applicable provisions of Cal. Code Regs. tit. 23, div. 3, ch. 15 as feasible.	Cleanup and discharge of groundwater to groundwater or surface water and establishment of containment zones.	SWRCB Res. 92-49 (Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Cal. Water Code § 13304) (Cal. Water Code § 13307) (02 October 1996)				Not an ARAR. Monitoring conducted in compliance with the WDRs for the site (Order No. 99-010) have not resulted in discharges that require cleanup or abatement.

(table continues)

Table B4-2 (continued)

2 – Continued groundwater monitoring and restrictions on field irrigation; 3 – Continued groundwater monitoring, ditch lining, and restrictions on field irrigation.

Action	Requirement	Prerequisites	Citation	ARAR Determination			Comments
				A	RA	TBC	
Waste discharge requirements	Sets concentration limits established for constituents of concern for monitoring points and identifies points of compliance.	Waste discharge requirements for NAF El Centro.	Waste Discharge Requirements, Colorado River Basin RWQCB Order 99-010	1,2,3			Substantive provisions of the WDRs pertinent to the proposed remedial actions are potentially applicable ARARs.
Discharge to surface waters	Establishes numerical water quality objectives for the protection of human health and freshwater aquatic life for a large number of toxic pollutants. It also establishes narrative objectives and toxicity objectives. It provides a program of implementation and specifies proposals to adopt numerical standards for water bodies that are dominated by reclaimed water and agricultural drainage.	Discharge to surface waters, enclosed bays, and estuaries.	Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California. (Phase 1 of the Inland Surface Waters Plan and the Enclosed Bays and Estuaries Plan)				Not an ARAR. Discharge to surface waters, enclosed bays, and estuaries is not part of the remedial alternatives.
Monitoring	Requires detection monitoring. Once a significant release has occurred, evaluation or corrective action monitoring is required.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20385(a)(1) and (a)(2)	1,2,3			The substantive requirements have been identified as potentially applicable. These requirements have been included in the WDRs for the landfill (Order No. 99-010).
Groundwater monitoring	Provides minimum requirements for a groundwater detection monitoring program.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20420	1,2,3			The substantive requirements have been identified as potentially applicable. These requirements have been included in the WDRs for the landfill (Order No. 99-010).

(table continues)

Table B4-2 (continued)

2 – Continued groundwater monitoring and restrictions on field irrigation; 3 – Continued groundwater monitoring, ditch lining, and restrictions on field irrigation.

Action	Requirement	Prerequisites	Citation	ARAR Determination A	RA	TBC	Comments
Monitoring	Maintain monitoring systems and monitor groundwater, surface water, and the unsaturated zone in accordance with applicable requirements of Article 1, Subchapter 3, Chapter 3, Subdivision 1 (Section 20380 et seq.)		Cal. Code Regs. tit. 27, § 21090(c)(3)	1,2,3			The substantive provisions that address groundwater monitoring are potentially applicable for the proposed remedial alternatives. These requirements are included in the WDRs for the landfill (Order No. 99-010).
Air Quality Management District/Air Pollution Control District*							
Air emission	Owners and operators of stationary sources that emit hazardous air pollutants to install best available control technology for toxics to any constructed or reconstructed major source.	Emission of hazardous air pollutants from construction or reconstruction of stationary sources.	Imperial County Rule 216, "Construction or Reconstruction of Major Stationary Sources that Emit Hazardous Air Pollutants"		2,3		The proposed remedial alternatives do not involve the construction or reconstruction of a major stationary source. However, the substantive requirements are potentially relevant and appropriate for proposed remedial alternatives at NAF El Centro.
	Prohibits the release or discharge into the atmosphere from any single source of emission whatsoever, any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than 3 minutes in any hour that meets the specifications set forth in the regulation.	Discharge of pollutants.	Imperial County Rule 401, "Opacity of Emissions"	2,3			Though not anticipated, in the event that emissions are released from proposed remedial alternatives, the substantive requirements are potentially applicable.
	Sets forth discharge limitations from any single emissions unit for particulate matter (Table 403-1) and air contaminants (Table 403-2).	Discharge of air contaminants and particulate matter into the atmosphere.	Imperial County Rule 403, "General Limitations on the Discharge of Air Contaminants"		2,3		The substantive requirements are relevant and appropriate to proposed remedial alternatives.

(table continues)

Table B4-2 (continued)

Note:

* statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of the specific actions are considered potential ARARs.

Acronyms/Abbreviations:

A – applicable
ARAR – applicable or relevant and appropriate requirement
Cal. Code Regs. – *California Code of Regulations*
Cal. Water Code – *California Water Code*
C.F.R. – *Code of Federal Regulations*
ch. – chapter
CWA – Clean Water Act
div. – division
DON – Department of the Navy
mg/L – micrograms per liter
NAF – Naval Air Facility
NPDES – National Pollutant Discharge Elimination System
RA – relevant and appropriate
Res. – resolution
RWQCB – Regional Water Quality Control Board Colorado River Basin Region
§ – section
SWRCB – (California) State Water Resources Control Board
TBC – to be considered
tit. – title
WDR – waste discharge requirement

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Section B5
REFERENCES

Bechtel National, Inc. 1997. Action Memorandum/Removal Action Work Plan for Non-Time-Critical Removal Actions at Site 1, Naval Air Facility, El Centro, Imperial County, California. February.

———. 2000. Annual Monitoring Report for Installation Restoration Program Site 1, Magazine Road Landfill, Naval Air Facility El Centro, California. May.

BNI. *See* Bechtel National, Inc.

California Regional Water Quality Control Board. 1994. Water Quality Control Plan for the Colorado River Basin Region – Region 7.

———. 1999a. Order No. 99-010. Waste Discharge Requirements for U.S. Department of the Navy, Southwest Division Naval Facilities Engineering Command, Naval Air Facility, El Centro, California. Closure of Installation Restoration Program Site 1 (Magazine Road Landfill) March.

———. 1999b. Monitoring and Reporting Program No. 99-010 for U.S. Department of the Navy, Southwest Division Naval Facilities Engineering Command, Naval Air Facility, El Centro, California. March.

California State Water Resources Control Board. 1968. Resolution 68-16.

———. 1988. Resolution 88-63

———. 1992. Resolution 92-49

KEA Environmental. 1994. Historic and Archaeological Resources Protection Plan, NAF El Centro, California. October.

RWQCB. *See* California Regional Water Quality Control Board.

Stormo, J. 1998. Letter to Fred Rivera. June.

SWRCB. *See* California State Water Resources Control Board.

United States Environmental Protection Agency. 1986. Guidelines for Groundwater Classification Under the EPA Groundwater Protection Strategy.

——— 1988a. CERCLA Compliance With Other Laws Manual, Draft Guidance. EPA/540/G-89/006, Office of Emergency and Remedial Response, Washington, DC. August.

——— 1988b. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. OSWER Directive 9355.3-01, -02. EPA/540/G-89/004. October.

———. 1991a. Management of Investigation-Derived Wastes During Site Inspections. EPA/540/G91/009. May.

——— 1991b. ARARs Q's and A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers. OSWER Directive No. 9234.2-01/FS-A, Washington, DC. June.

U.S. EPA. *See* United States Environmental Protection Agency

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ATTACHMENT A

ARARs CORRESPONDENCE

Attachment A
ARARs CORRESPONDENCE

1. Letter – 18 April 1995. From David Dawson, Remedial Project Manager, DON, to Ms. Tizita Bekele, DTSC. Request to identify ARARs for IR Sites 1, 2, 3, 4, and 8.
2. Letter – 21 June 1995. From Milasol Gaslan, Unit Chief, DTSC, to Mr. David Dawson, DON. "Applicable or Relevant and Appropriate Requirements for Naval Air Facility, El Centro, California."
3. Letter – 01 May 1995. From Milasol Gaslan, Unit Chief, DTSC, to Ms. Liann Chavez, RWQCB. "Request for Applicable or Relevant and Appropriate Requirements for Naval Air Facility, El Centro, California."
4. Letter – 17 May 1995. From John Clinkenbeard, Associate Engineering Geologist, California Integrated Waste Management Board, to Ms. Tizita Bekele, DTSC. "Applicable or relevant and appropriate requirements for the Naval Air Facility, El Centro, California, Sites 1, 2, 3, 4, and 8; Imperial County . . . ."
5. Memorandum – 06 June 1995. From John Turner, Chief, Department of Fish and Game, to Ms. Tizita Bekele, DTSC. "Applicable or Relevant and Appropriate Requirements for Naval Air Facility, El Centro, California."
6. Letter – 10 June 1995. From Gaspar Torres, Deputy Air Quality Control Officer, Imperial County APCD, to Ms. Milasol Gaslan, DTSC. "Response to ARAR requirements Naval Air Facility, El Centro, California."
7. Letter – 14 June 1995. From Robert Perdue, California RWQCB, to Ms. Tizita Bekele, Project Manager, DTSC. "Applicable or Relevant and Appropriate Requirements for the Naval Air Facility, El Centro, California, Sites 1, 2, 3, 4, and 8; Imperial County California."
8. Letter – 28 November 2001. From Issac Hirbawi, Hazardous Substance Engineer, DTSC, to Mr. Fred Rivera, Installation Restoration Program Manager, Naval Air Facility El Centro. "Request for Applicable or Relevant and Appropriate Requirements (ARARs) for Installation Restoration (IR) Site 1, Magazine Road Landfill, Naval Air Facility, El Centro (NAFEC), Imperial County, California."

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DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
ENVIRONMENTAL DIVISION
1220 PACIFIC HIGHWAY, RM 18
SAN DIEGO, CALIFORNIA 92132-5181

5090
Ser 1821.MD/611
April 18, 1995

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

Ms. Tizita Bekele
California Environmental Protection Agency
Department of Toxic Substances Control
Site Mitigation Branch
245 Broadway, Suite 425
Long Beach, CA 90802-4444

Dear Ms. Bekele:

Pursuant to accomplishing the goals of the Naval Air Facility (NAF), El Centro Installation Restoration (IR) program outlined for fiscal year 1995, we are hereby requesting that the Department of Toxic Substances Control, as the lead agency for the State of California, identify potential State chemical-specific, action specific, and location-specific "Applicable" or "Relevant and Appropriate" Requirements (ARARs) for an Interim Removal Action (IRA) at the following IR sites: Site 1, Magazine Road Landfill, Site 2, Patrol Road Landfill, Site 3, Sludge Burial Area, Site 4, Fourth Street Fire Fighting Training Area, and Site 8, the Scrapyard.

In addition, the Department of the Navy is requesting that the State of California identify any other criteria, advisories, guidance, and proposed standards that the State requests to be considered (TBCs) for the above-identified IR Sites. Please coordinate responses from all California state agencies.

The department is requesting timely identification of potential State ARARs consistent with Section 121(d)(2)(A) of CERCLA and under the National Contingency Plan (NCP), 40 CFR §§300.400(g) and 300.515(d) & (h). Experience to date around the country has shown that a failure to identify ARARs with sufficient precision, early in the IR process, can cause severe disruptions in timely implementation of remedial and removal actions. To ensure timely and complete ARARs identification, for each IR Site listed above, please include the following information:

1. A specific citation to the statutory or regulatory provision(s) for the potential State ARAR and the date of enactment or promulgation.

2. A brief description of why the potential State ARAR is applicable or relevant and appropriate to the particular IR Site.

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Ser 1821.MD/
April 18, 1995

3. A description of how the potential State ARAR would apply to potential remedial action, including: specific numeric discharge, effluent, or emission limitations; hazardous substance/constituent action or cleanup levels; etc., if the State intends to take the position that the potential State ARAR includes such limitations, levels, etc.

4. If the State believes its proposed ARAR is more stringent than the corresponding Federal ARAR, please provide the rationale and technical justification for this position.

5. If the State determines that there is not enough information to fully respond to our request, please identify any additional information that would be required to support identification of State ARARs and their application.

Consistent with 40 CFR §300.515(h)(2), we are requesting that you send a response via first class mail addressed to the undersigned and postmarked within 30 calendar days of receipt of this request. Please direct any technical questions that you may have concerning this request to the undersigned at (619) 532-3966 and any legal questions to Mr. Rex Callaway, Associate Counsel (Environmental), at (619) 532-1662.

Sincerely,

DAVID DAWSON
Remedial Project Manager
By direction of
the Commanding Officer

Copy to:
Commanding Officer (Code 00)
Naval Air Facility
El Centro, CA 92243-5001

7

STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

ion 4
West Broadway, Suite 425
Beach, CA 90802-4444

(310) 590-4856

1995 JUN 26 PM 1:49

June 21, 1995

Mr. David Dawson
DEPARTMENT OF THE NAVY
Southwest Division
Naval Facilities Engineering Command
Environmental Division
1220 Pacific Highway, Room 18
San Diego, California 92132-5181

Dear Mr. Dawson:

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR NAVAL AIR FACILITY, EL CENTRO, CALIFORNIA

We have received your letter of April 18, 1995, requesting the Department to provide you with the California applicable or relevant and appropriate requirements (ARARs) for removal actions at Site 1, Magazine Road Landfill, Site 2, Patrol Road landfill, Site 3, Sludge Burial Area, Site 4, Fourth Street Fire Fighting Training Area, and Site 8, the Scrapyard. Enclosed are the Department's as well as other state agencies' ARARs at the subject site along with our letter including the list of agencies that the Department had contacted. In addition to the California ARARs, the Federal ARARs need to be identified by the Navy and be included in the engineering evaluation/cost analysis (EE/CA) and/or action memorandum.

Please note that the ARARs provided here are identified based on the information we have to date about the sites and on the proposed removal action alternatives. In the event that you seriously consider different alternatives and/or additional information become available, you should request the State for additional ARARs.

arar ltr

Please contact Ms. Tizita Bekele at (310) 590-4981 if you have any questions concerning this matter.

Sincerely,

for Milasol C. Gaslan, P.E.
Unit Chief
Federal Facilities Unit "A"
Office of Military Facilities
Southern California Operations

Enclosures (6)

cc: Ms. Liann Chavez
Regional Water Quality Control Board
Region 7
73-720 Fred Waring Drive, Suite 100
Palm Desert, California 92260

Mr. Fred Rivera
Environmental Department
Naval Air Facility
El Centro, California 92243-5001

California
Department of Toxic Substances Control
Potential ARARs

CHEMICAL NAME	REQUIREMENTS		CITATION	DESCRIPTION	APPLICABLE/ RELEVANT & APPROPRIATE
Inorganic Chemicals	STLC (mg/L)	TTLC (mg/Kg)	22 CCR 66261.24	Criteria for identifying a waste as hazardous - if the waste contains a substance at a concentration which equals or exceeds its listed STLC value as determined by Waste Extraction Test, or at a concentration that equals or exceeds its TTLC value, then it is considered hazardous and must comply with all the requirements that hazardous wastes are subject to.	yes/yes
Antimony	15	500			
Arsenic and/or compounds	5.0	500			
Asbestos		1.0 (as percent)			
Barium and/or compounds	100	10,000			
Beryllium and/or compounds	0.75	75			
Cadmium and/or compounds	1.0	100			
Chromium (VI) compounds	5	500			
Chromium and/or chromium (III) compounds	5	2,500			
Copper and/or compounds	25	2,500			
Fluoride salts	180	18,000			
Lead and/or compounds	5.0	1,000			
Mercury and/or compounds	0.2	20			
Molybdenum and/or compounds	350	3,500			
Nickel and/or compounds	20	2,000			
Selenium and/or compounds	1.0	100			
Silver and/or compounds	5	500			
Thallium and/or compounds	7.0	700			
Vanadium and/or compounds	24	2,400			
Zinc and/or compounds	250	5,000			

California
Department of Toxic Substances Control
Potential ARARs

OrganicChemicals	**STLC (mg/L)**	**TTLC (mg/Kg)**			
Aldrin	0.14	1.4	22 CCR 66261.24	Criteria for identifying a waste as hazardous - if the waste contains a substance at a concentration which equals or exceeds its listed STLC value as determined by Waste Extraction Test, or at a concentration that equals or exceeds its TTLC value, then it is considered hazardous and must comply with all the requirements that hazardous wastes are subject to.	Yes/Yes
Chlordane	0.25	2.5			
DDT, DDE, DDD	0.1	1.0			
2,4-Dichlorophenoxyacetic acid	10	100			
Dieldrin	0.8	8.0			
Dioxin (2,3,7,8-TCDD)	0.001	0.01			
Endrin	0.02	0.2			
Heptachlor	0.47	4.7			
Kepone	2.1	21			
Lead compounds, organic		13			
Lindane	0.4	4.0			
Methoxychlor	10	100			
Mirex	2.1	21			
Pentachlorophenol	1.7	17			
Polychlorinated biphenyls (PCBs)	5.0	50			
Toxaphene	0.5	5			
Trichloroethylene	204	2040			
2,4,5-Trichlorophenoxypropionic acid	1.0	10			

California
Department of Toxic Substances Control
Potential ARARs

ACTION/ TECHNOLOGY	REQUIREMENT	CITATION	DESCRIPTION	APPLICABLE/ RELEVANT & APPROPRIATE
Storage of hazardous waste on-site	Limits accumulation time of hazardous waste to 90 days unless an exemption is granted	22 CCR 66262.34	Standards applicable to Generators of Hazardous Waste	Yes/Yes
Off-site Disposal of Hazardous Waste	Applicability, manifest, pretransport requirements, recordkeeping and reporting, and export of hazardous waste	Title 22, Ch 12 Articles 1-5, Sections 66262.10 - 66262.57	Standards applicable to Generators of Hazardous Waste	Yes/Yes
Off-Site Transportation of Hazardous Waste	General requirements, compliance with manifest system and recordkeeping, discharges and exemptions	Title 22, Ch 13, Articles 1-4, Sections 66263.10 - 66263.46	Standards applicable to Transporters of Hazardous Waste	Yes/Yes
Management of Hazardous Waste at Transfer, Treatment, Storage and Disposal Facilities	General Requirements, facility standards, preparedness and prevention, contingency plan and emergency procedures, manifest system, recordkeeping, and reporting, water quality monitoring	Title 22, Ch 14, Articles 1 - 8, Sections 66264.1 - 66264.148	Standards for Owners and Operators of Hazardous Waste Transfer, Treatment, Storage, and Disposal Facilities	Yes/Yes

California
Department of Toxic Substances Control
Potential ARARs

ACTION/ TECHNOLOGY	REQUIREMENT	CITATION	DESCRIPTION	APPLICABLE/ RELEVANT & APPROPRIATE
Management of Hazardous Waste Containers	Use and management, compatibility of waste with container, inspections, containment, special requirements	Title 22, Div 4.5, Ch 14, Articles 9, Sections 66264.170 - 66264.178	Owners and operators of all hazardous waste facilities that transfer or store containers of hazardous waste	Yes/Yes
Tank System	Assessing Integrity, Design and Installation, Containment and Detection of Releases, Operating Requirements, Inspections, Response to Leaks or Spills, Closure and Post-Closure, Special Requirements	Title 22, Div 4.5, Ch 14, Articles 10 Sections 66264.190 - 66264.199	For Transfer, storage or Treatment of hazardous waste	Yes/Yes
Surface Impoundments	Applicability, Design and Operating Requirements, Monitoring and Inspection, Emergency Repairs; Contingency Plans, Closure and Post-Closure, Special Requirements	Title 22, Div 4.5, Ch 14, Article 11, Sections 66264.220 - 66264.231	For treatment, storage or disposal of hazardous waste	Yes/Yes

California
Department of Toxic Substances Control
Potential ARARs

ACTION/ TECHNOLOGY	REQUIREMENT	CITATION	DESCRIPTION	APPLICABLE/ RELEVANT & APPROPRIATE
Waste Piles	Applicability, Design and Operating Requirements, Monitoring and Inspection, Closure and Post-Closure, Special Requirements	Title 22, Div 4.5, Ch 14, Article 12, Sections 66264.250 - 66264.259	To store or treat Hazardous Waste	Yes/Yes
Land Treatment	Applicability, Treatment Program and Demonstration, Design and Operating Requirements, Record keeping, Closure and Post-Closure, Special Requirements	Title 22, Div 4.5, Ch 14, Article 13, Sections 66264.270 - 66264.283	To treat or dispose of Hazardous Waste	Yes/Yes
Landfill Residual Repositories	Applicability, Design and Operating Requirements, Monitoring and Inspection, Surveying and Recordkeeping, Closure and Post-Closure, Special Requirements	Title 22, Div 4.5, Ch 14, Articles 14 and 14.5, Sections 66264.300 - 66264.321	Disposal of Hazardous Waste	Yes/Yes

California
Department of Toxic Substances Control
Potential ARARs

ACTION/ TECHNOLOGY	REQUIREMENT	CITATION	DESCRIPTION	APPLICABLE/ RELEVANT & APPROPRIATE
Land Disposal Restrictions RCRA Wastes	General applicability, dilution prohibited, case-by-case extensions to effective date, waste analysis and record-keeping, and special rules for wastes that exhibit a characteristic	Title 22, Div 4.5, Ch 18, Article 1	Defines hazardous wastes that are restricted from land disposal and prohibited waste that may be land disposed	Yes/Yes
Land Disposal Prohibitions Non-RCRA Wastes	Waste Specific Prohibitions	Title 22, Div 4.5, Ch 18, Article 10, Section 66268.100	Identifies Non-RCRA Waste that are subject to land disposal prohibitions	Yes/Yes
Land Disposal Non-RCRA Waste	A restricted waste may be land disposed without further treatment if an extract of the waste or treatment residue of the waste does not exceed the value listed in Table I-CCWE of section 66268.106	Title 22, Div 4.5, Ch 18, Article 11	Treatment Standards expressed as concentrations in Waste Extract	Yes/Yes

California
Department of Toxic Substances Control
Potential ARARs

ACTION/ TECHNOLOGY	REQUIREMENT	CITATION	DESCRIPTION	APPLICABLE/ RELEVANT & APPROPRIATE
Disposal of Extremely Hazardous Waste	Disposal Permit Required	Title 22, Div 4.5, Ch 43	For disposal of extremely hazardous waste in California	Yes/Yes
Transportable Treatment Units and Fixed Treatment Units	Permit requirements, permit by rule, liability, financial and corrective action requirements	Title 22, Div 4.5, Ch 45	Permit requirements for treatment of hazardous wastes using a TTU or FTU	Yes/Yes
Incineration	Required of Hazardous Waste which: 1) has a heating value of more than 3000 BTU per pound of waste material; 2) contain more than one percent by weight of volatile organic compounds 3) is a liquid with a PCB concentration greater than 5 ppm	22 CCR 66268.120 22 CCR 66268.121 22 CCR 66268.110	Applies to any person who, after January 1, 1990, disposes of hazardous waste	Yes/Yes

California
Department of Toxic Substances Control
Potential ARARs

ACTION/ TECHNOLOGY	REQUIREMENT	CITATION	DESCRIPTION	APPLICABLE/ RELEVANT & APPROPRIATE
California Environmental Quality Act	Develop and maintain a high quality environment and take all actions necessary to protect, rehabilitate and enhance the environmental quality of the state. Requires either Environmental Impact Reports or Negative Declarations for cleanups, Interim Remedial Measures and occasionally, portions of Remedial Investigations and Feasibility Studies.	Public Resources Code, Div. 13, Section 21000 et. seq. 14 CAC, Div. 1, Part 3, Ch 4, Section 750 et seq. 14 CAC, Div. 6, Ch 3, Section 15000 et seq. 22 CAC, Div. 4, Ch 2, Section 60100 et seq. 23 CAC, Ch 4, Subchapter 15, Section 3720 et seq.	Requires compliance with all of California's environmental laws	Yes/Yes
Occupational Health and Safety Act	Specific requirements that employers must meet to ensure the safety of their employees	California Health and Safety Code, Div 5, Section 6300 et seq.	Assures safe and healthy working conditions	To Be Considered

STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, *Governor*

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

n 4
West Broadway, Suite 425
Long Beach, CA 90802-4444

May 1, 1995

Ms. Liann Chavez
California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, California 92260

Dear Ms. Chavez:

REQUEST FOR APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR NAVAL AIR FACILITY, EL CENTRO, CALIFORNIA

The Department of Toxic Substances Control (DTSC) has been designated by the California Environmental Protection Agency as the state regulatory lead in overseeing site cleanup actions at all Defense/State Memorandum of Agreement (DSMOA) military facilities. DTSC has the responsibility to contact state and local agencies and solicit the agencies' applicable or relevant and appropriate requirements (ARARs) for site cleanup activities at Naval Air Facility (NAF), El Centro. DTSC hereby requests that you identify all your Agency's ARARs (chemical, location and action specific) for the planned removal actions at Sites 1, 2, 3, 4, and 8.

ARARs are those legally applicable or relevant and appropriate standards, requirements, criteria or limitations of environmental laws defined in the CERCLA, Section 121 (d) (2) and as further defined in the National Contingency Plan (NCP), 40 CFR, Section 300. Pursuant to the NCP, the Navy is required to comply with all ARARs, i.e., laws and regulations promulgated by your agency which specifically address the hazardous substance, pollutant, contaminants, removal/remedial action, location or other circumstance found at these sites. Please include the specific appropriate citation(s) of the statute, regulation, code, rule, etc., that you have identified as an ARAR. Enclosed for you reference are a sample ARARs presentation format and two fact sheets which offer information regarding ARARs and NAF, El Centro.

The ARARs will be utilized in the evaluation and determination of best technologies to treat the contamination at the above sites. A table including brief description of the sites, contaminants detected during previous investigation, and the removal alternatives being considered by the Navy along with facility map showing the subject sites is also enclosed.

Your prompt identification of ARARs will ensure that the removal actions are in compliance with California's laws and regulations. We appreciate your response to this request within 30 days of receipt of this letter. Please direct your response to Ms. Tizita Bekele at the above letterhead address.

If you have questions or would like to discuss this matter, please contact Ms. Tizita Bekele at (310) 590-4981.

Sincerely,

Milasol C. Gaslan

Milasol C. Gaslan, P.E.
Unit Chief
Federal Facilities Unit "A"
Office of Military Facilities
Southern California Operations

Enclosures (4)

Mailing List

Ms. Liann Chavez
California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

Ms. Tamara Zielinski
California Integrated Waste Management Board
8800 Cal Center Drive
Sacramento, CA 95826

Dr. Michael Martin
California Department of Fish and Game
Environmental Services Division
20 Lower Ragsdale Drive Suite 100
Monterey, CA 93940

Terry Macauley
California Department of Health Services
Environmental Management Division
601 N. Seventh St.
Sacramento, CA 95814

Mr. Charles Warren
Executive Officer
California State Lands Commission
1807 13th St.
Sacramento, CA 85814

Mr. E.W. Blackmer, Chief
California Department of Transportation
Office of Environmental Analysis
1120 N St.
Sacramento, CA 95814

Mr. Harry Dillon
Imperial County Air Pollution Control District
150 S. 9th St.
El Centro, CA 92243

Mr. Thomas L. Wolf, Director
Environmental Health Services
Imperial County
939 Main St.
El Centro, CA 92243

Mr. Stephen Birdsall
Imperial County Agricultural Commissioner
150 S. 9th St.
El Centro, CA 92243

Mr. Ben Koski
El Centro Resource Area
Bureau of Land Management
333 S. Waterman Ave.
El Centro, CA 92243

Site Name	Description	Contaminants Detected	Removal Alternatives
Site 1 - Magazine Road Landfill	Site 1 is a 4 acre landfill used from 1965-1983 for disposal of wastes from on base activities. The type of wastes and approximate quantities received at this landfill include household rubbish (1 million cubic feet), plating wastes (30,000 cubic feet), asbestos (5,000 cubic feet), water bearing fuels (458,000 gallons), hydraulic fluid (5,000 gallons), sandblast grit(90,000 lbs), batteries (2,000), pesticides (1,000 gallons), motor oil (10,000 gallons), photographic chemicals (unknown quantities), and 40 mm cartridges (unknown quantities). The wastes were burned once a month throughout operation of the landfill.	metals, volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), polychlorinated biphenyl (PCB), and petroleum hydrocarbon	90,000 cubic yards of soil i) capping with irrigation restrictions, groundwater (GW) and soil vapor (SV) monitoring ii) capping with slurry wall, GW and SV monitoring iii) capping with GW and SV monitoring
Site 2 - Patrol Road Landfill	Site 2 is a 30 acre landfill used from 1946-1965. The type of wastes and approximate quantities disposed of include household rubbish (3 million cubic feet), asbestos (50,000 cubic feet), water bearing fuels (4,030,000 gallons), hydraulic fluid (20,000 gallons), paint (5,000 gallons), solvents (13,000 gallons), mercury amalgam (80 lbs), sandblast grit (100,000 lbs), batteries (2,000), pesticides (1,000 gallons), acid (2,000 gallons), motor oil (10,000 gallons), photographic chemicals (unknown quantities), and demolition debris (unknown quantities). Site 2A is an expansion of Site 2 and was used from 1959-1965. Wastes disposed of were similar as Site 2.	metals, organic lead, pesticides, petroleum hydrocarbon	The Navy has not provided us the removal alternatives for Site 2 at this time. We will request action specific ARARs when we receive the information.
Site 3 - Sludge Burial Area	Site 3 is a 20 x 10 x 5 feet pit excavated for burial of sewage sludge from a drying bed in the sewage treatment plant in 1986. Approximately 800 cubic feet of sludge containing up to 480 parts per billion total cyanide and 800 ppb silver were buried at this site.	metals, pesticides, SVOCs, petroleum hydrocarbon	60 cubic yards of soil i) excavation and off-site disposal ii) excavation, stabilization and off-site disposal iii) excavation, stabilization and on-site landfill (Site 1) disposal iv) excavation, soil washing with solids disposal at on -site landfill(Site 1) and water disposal at Waste Water Treatment Plant (WWTP)

Site 4 - 4th Street Fire Fighting Training area	Site 4 is an earthen beamed, 15 foot diameter pit used for fire fighting training from 1963-1975. The fuels and approximate quantities burned include JP-5 (200,000 gallons), JP-4 (300 gallons), AVGAS (500 gallons), MOGAS (1,000 gallons), diesel fuel #2 (700 gallons), and hydraulic fluid (20 gallons).	metals, fluorene, petroleum hydrocarbon	370 cubic yards of soil i) excavation, on-site thermal desorption and backfill ii) excavation and off-site thermal desorption iii) excavation, on-site exsitu bioremediation and on-site landfill (Site 1) disposal
Site 8 - Scrap Yard	Site 8 is a 3 acre area used by the Defense Reutilization and Marketing Office for storage of sellable metals from 1958-1982. Transformers and paint cans were stored at this site and empty transformers were removed in 1983.	metals, PCB, pesticide, toluene, methylene chloride, petroleum hydrocarbon	3,500 cubic yards i) excavation and off-site disposal ii) excavation, soil washing, and solids disposal at on-site landfill (Site 1) and water disposal at WWTP iii) excavation, soil washing, and solids disposal at an off-site and water disposal at WWTP iv)excavation, stabilization and on-site landfill (Site 1) disposal v) excavation, stabilization and off-site landfill disposal

STATE OF CALIFORNIA

Pete Wilson, Governor

CALIFORNIA INTEGRATED WASTE MANAGEMENT BOARD

'0 Cal Center Drive
ramento, California 95826

May 17, 1995

Ms. Tizita Bekele
Project Manager
Department of Toxic Substances Control
Region No. 4 , Base Closure Unit
245 West Broadway, Suite 425
Long Beach, California, 90802-4444

Subject: Applicable or Relevant and Appropriate Requirements for the Naval Air Facility El Centro California, Sites 1, 2, 3, 4, and 8; Imperial County, SWIS Nos. 13-CR-0010 (Site 1), 13-CR-0009 (Site 2) and 13-CR-0011 (Site 3)

Dear Ms. Bekele:

This letter is in response to your solicitation for State applicable or relevant and appropriate requirements (ARARs), dated May 1, 1995 for the Naval Air Facility El Centro, Imperial County, California . After an initial review of the brief site descriptions in your letter, it appears that the California Integrated Waste Management Board (CIWMB) applicable or relevant and appropriate requirements (ARARs) could be required for sites 1, 2, and 3. The other sites described in your request for ARARs (sites 4 and 8) do not appear to be solid waste disposal sites and, therefore, do not fall within the jurisdiction of the CIWMB. Provided below is an explanation of the CIWMB's ARARs.

The California Integrated Waste Management Board (CIWMB) has the following general statutory and regulatory authority:

- Statutory authority: The Integrated Waste Act of 1989, as embodied in Public Resources Code Section 40000 *et seq.*
- Regulatory authority: Title 14, California Code of Regulations, Division 7.

Pursuant to Public Resources Code Sections 43021 and 43509 the CIWMB has adopted regulations that include substantive standards for the design, operation, maintenance, closure and ultimate reuse of solid waste disposal sites. These regulations are contained in the California Code of Regulations, Title 14 (14 CCR), Division 7, and were reviewed by U.S. EPA as part of the RCRA Subtitle D Approved State Program.

The enclosed tables provide substantive requirements for closure, postclosure maintenance and consolidation of solid waste disposal sites. These ARARs are being submitted pursuant to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 121(d) and the National Contingency Plan.

To expedite the determination of site specific ARARs for the Naval Air Facility El Centro, CIWMB staff will need to review the documents for the facility that would include information regarding solid waste disposal sites as defined in PRC 40122.

If you have any questions or changes regarding ARAR determination or substantive requirements, please notify me at (916) 255-3833 prior to forwarding to the Navy, so that the CIWMB can assure consistent application of its requirements throughout California.

Sincerely,

John P. Clinkenbeard
Associate Engineering Geologist
Closure and Remediation Branch
Permitting and Enforcement Division

Enclosure: Table, "State ARARs for Solid Disposal Sites Closure, Postclosure Maintenance and Consolidation"

cc: Ms. Suparana Chakladar, Colorado River Regional Water Quality Control Board (with enclosure)
Mr. Gerald Quick, Imperial County LEA (with enclosure)

State ARARs for Solid Waste Disposal Site Closure, Postclosure Maintenance and Consolidation

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17766 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Emergency Response Plan (ERP): potential emergency conditions that may exceed the design of the site and could endanger the public health or environment must be anticipated. Response procedures for these conditions must be addressed in the RD/RA plans.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17767 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Security at Closed Sites: all points of access to the site must be restricted, except permitted entry points. All monitoring, control, and recovery systems shall be protected from unauthorized access.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17773 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Cover: the design and construction of the final cover must meet specific prescriptive standards. These include minimum thickness and quality of the construction material.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17774 (a)to(h) Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Construction Quality Assurance (CQA): a CQA program must be designed and implemented. It must include specific parameters (and for some components specific testing methods) for each component of the final cover.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17776 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Grades: the final grades for the covered landfill must meet grading standards provided in 23 CCR 2581, they must be appropriate to control runoff and erosion.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17777 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Site Face: the design of the final site face must provide for the integrity of the final cover both under static and dynamic conditions.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17778 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Final Drainage: the design of the final cover must control runon and runoff produced by a 100 year 24 hour storm event and must be prepared according to CQA requirements.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17779 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Slope Protection and Erosion Control: the design and construction of the slopes must protect the integrity of the final cover and minimize soil erosion.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17781 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Leachate Control During Closure and Post Closure: leachate must be monitored, collected, treated, and discarded appropriately.	The state does not intend that subsurface leachate monitoring and collecting systems need to be added to existing landfills unless leachate production and/or accumulation is evident.	For closing sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17783 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Gas Monitoring and Control During Closure and Post Closure: landfill gases must be collected and analyzed; the concentration of combustible gas at the landfill boundary must be 5% or less, trace gases must not be at levels that cause adverse health or environmental impacts.	Monitoring should be conducted for 30 years or until authorized to be discontinued by showing that there is no potential threat to public health and safety or the environment.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17788 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Post Closure Maintenance: the landfill must be maintained and monitored for no less than 30 years following closure.	Monitoring is continued for 30 years following closure unless it can be demonstrated that the landfill does not pose a threat to public health and safety or a threat to the environment.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	14 CCR 17796 Chapter 3, Article 7.8 Disposal Site Closure and Postclosure Maintenance	Applicable or Relevant and Appropriate	Post Closure Land Use: Site Closure Design shall show one or more proposed uses of the closed site or show development that is compatible with open space. Changes in postclosure land use must be approved by the appropriate State agency prior to implementation.	Closure or Postclosure Maintenance Standard of Title 14, CCR, Chapter 3, Article 7.8. Scope and Applicability pursuant to 14 CCR 17760.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17636 Chapter 3, Article 7.3 Disposal Site Records	Applicable or Relevant and Appropriate	Weight/Volume Records: the weight or volume of waste accepted must be determined to an accuracy of ±10%	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17637 Chapter 3, Article 7.3 Disposal Site Records	Applicable or Relevant and Appropriate	Subsurface Records: the length and depth of any cut(s) made in natural terrain where fill will be placed and the depth to groundwater must be determined and documented.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17658 Chapter 3, Article 7.4 Disposal Site Improvements	Applicable or Relevant and Appropriate	Site Security: the perimeter of the landfill must be secured either through barriers or topographic constraints to discourage unauthorized entry.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17659 Chapter 3, Article 7.4 Disposal Site Improvements	Applicable or Relevant and Appropriate	Access Roads: landfill roads must be reasonably smooth to minimize dust and tracking of materials onto public roads.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17676 Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Confined Unloading: Requires limiting unloading area, controlling windblown materials, and deposition at toe of fill.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17677** Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Spreading and Compacting: Requires spreading and compacting of refuse in layers.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17678** Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Slopes and Cuts: The slope of the working face shall be maintained at a ratio which will allow effective compaction of the wastes. The depth of cuts and slopes of trench sides shall not exceed specified horizontal to vertical ratios.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17680** Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Stockpiling: Requires stockpiled cover material and unacceptablenative materials to be placed so as not to cause problems or interference with site operations.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17684** Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Intermediate Cover: Requires cover on fill where no additional refuse will be deposited within 180 days.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17686 Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Scavenging: Scavenging is prohibited.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17687 Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Salvaging Permitted: Salvaging is permitted in a planned and controlled manner.	No salvage planned as a part of the selected action. Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17688 Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Volume Reduction and Energy Recovery: Volume reduction and energy recovery are permitted in planned and controlled manners.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17689 Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Processing Area: Processing area shall be confined to greatest degree practicable.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17690** Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Storage of Salvage: Salvage material must be safely isolated for storage.	No salvage planned as a part of the selected action. Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17691** Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Removal: Storage time for salvage materials shall be limited to a safe duration.	No salvage planned as a part of the selected action. Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17692** Chapter 3, Article 7.5 Disposal Site Operations	Applicable or Relevant and Appropriate	Non-Salvageable Items: Items capable of impairing public health shall not be salvaged without approval by Enforcement Agency and local health entity.	No salvage planned as a part of the selected action. Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17701** Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Nuisance Control: Each site shall be operated and maintained so as not to create a public nuisance.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17704 Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Leachate Control: The operator shall take adequate steps to monitor, collect, treat, and effectively dispose of leachates.	The state does not intend that subsurface leachate monitoring and collection systems need to be installed at existing sites unless there is evidence of leachate production and/or accumulation. Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17705 Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Gas Control: Landfill gas control may be required based on the monitoring results.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17706 Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Dust Control: The operator shall take adequate measures to minimize the creation of dust.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17707 Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Vector and Bird Control: The operator shall take adequate measures to control or prevent the propagation, harborage, or attraction of flies, rodents, or other vectors, and to minimize bird problems.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17708 Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Drainage And Erosion Control: Adequate drainage shall be provided. Effects of erosion shall be promptly repaired and steps taken to prevent further occurrence.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17709 Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Contact with Water: No solid waste shall be deposited in direct contact with surface water.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 17710 Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Grading of Fill Surface: Covered surfaces of the disposal area shall be graded to promote run-off and prevent ponding, accounting for future settlement.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030 California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17711** Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Litter Control: Litter and loose materials shall be routinely collected and disposed of properly.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17713** Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Odor Control: The disposal site shall not be a source of odor nuisances.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	**14 CCR 17741** Chapter 3, Article 7.6 Disposal Site Controls	Applicable or Relevant and Appropriate	Burning Wastes: Burning wastes shall be extinguished.	Applies to solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

State ARARs for Closure, Postclosure Maintenance and Consolidation of Solid Waste Disposal Sites

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502, 43020, 43021 and 43030	14 CCR 18222 Chapter 5, Article 3.2 Reports of Facility Information	Applicable or Relevant and Appropriate	Report of Disposal Site Information: The planning and procedural requirements necessary to ensure that solid waste is handled and disposed in manners that protect public health and safety and the environment must be conducted.	Applies to operating solid waste disposal sites as defined by Public Resources Code Section 40122.	For consolidation sites

14 CCR - California Code of Regulations, Title 14 ARAR - applicable or relevant and appropriate requirement ROD - Record of Decision RD/RA - remedial design/remedial action

State of California

Memorandum

Ms. Tizita Bekele
Department of Toxic Substances Control
Region 4
245 West Broadway, Suite 425
Long Beach, California 90802-4444

Date : June 6, 1995

From : Department of Fish and Game

Subject : APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARAs) FOR NAVAL AIR FACILITY, EL CENTRO, CALIFORNIA (NAFEC)
[PCA 60140 NTX 074 00 Hrs 16]

This is in response to your letter of May 1, 1995, requesting potential state location specific ARARs for subject sites. The Department of Fish and Game appreciates your request for providing State laws and regulations to guide the planned Remedial Investigation and Feasibility Study (RI/FS) and environmental cleanup at NAFEC.

As the lead state agency for toxic cleanup, you are making an inquiry to the Department for purposes of coordination and definition of appropriate State cleanup requirements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as a portion of the RI/FS process. This letter will also serve to advise you of the Department's interest in coordinating any natural resource issues as one of the designated State natural resources trustees, which may be necessary should the release(s) of any hazardous materials at subject sites affect State natural resources, pursuant to CERCLA.

We have not had the opportunity to participate in inspections of sites 1, 2, 3, 4, and 8. However, based upon information attached to your request, Department staff identified potential actions that could affect State fish and wildlife resources. These areas include:

(1) Site 1 - Magazine Road Landfill

(2) Site 2 - Patrol Road Landfill

(3) Site 3 - Sludge Burial Area

(4) Site 4 - 4th Street Fire Fighting Training area

(5) Site 8 - Scrap Yard

Fish and Game Code sections 5650 (a), (b) and (f) are possible State location specific ARARs if toxic materials are placed where they can enter waters of the State. These code sections prohibit the deposition into State waters of, *inter alia*, petroleum products [Section 5650(a)], factory refuse [Section 5650(b)], and any substance deleterious to fish, plants or birds [Section 5650 (f)]. These are substantive promulgated environmental protection requirements. These requirements impose strict criminal liability on violators. [*People v. Chevron Chemical Company* (1983) 143 Cal. App. 3d 50.]. This imposition of strict criminal liability imposes a standard that is more stringent than Federal law. The extent to which each subdivision of Section 5650 is relevant and appropriate depends on site specifics. There is also a scientific technical reason for inclusion of Section 5650 as a potential location specific ARAR. State and Federal water quality control standards are generally developed, utilizing data, information, and guidance from numerous sources. Federal water quality criteria may allow higher concentrations of chemicals for limited time periods, which can result in conditions which are "deleterious" to State fish, plants, or birds. The extent to which each subdivision of Section 5650 is relevant and appropriate depends on site specific conditions.

In addition, other State laws and statues may apply to the determination of primary remediation goals at the subject sites for the protection of fish and wildlife resources and their habitats:

- Designation of the Department of Fish and Game as trustee for State fish and wildlife resources: Fish and Game Code Section 711.7;
- Possession permits for scientific purposes, etc.: Fish and Game Code Section 1002;
- Illegal take of birds and mammals: Fish and Game Code Section 3003;
- Relevant policies for the general protection and conservation of fish and wildlife resources: Fish and Game Code sections 1600, 1700, 1750, 1801, 2014, and 12016; Water Code Section 1243;
- Requirements for endangered or rare species: Fish and Game Code Section 1900 et seq.; sections 2050 et seq. to 2068, sections 2070, 2080, and sections 2090 et seq. to 2096.

Other Laws and Treaties:

- Federal Endangered Species Act of 1973;
- California Endangered Species Act (Fish and Game Code sections 2050 and 2065).

While many of these latter identified laws may be considered essentially procedural or do not pose substantive requirements, they should be considered (To Be Considered or "TLCs") in the remedial alternative review process for the protection of State natural resources, as they provide advice and guidance that private parties are subject to if they were undertaking actions independently from the CERCLA process. I have enclosed copies of these laws and regulations for your information. If you have any questions regarding this letter or the enclosure, please call me at (916) 653-4875 or Dr. Michael Martin at (408) 649-7178.

John Turner, Chief
Environmental Services Division

Enclosure

cc: Department of Fish and Game

Dr. Michael Martin (W/O Enclosure)
Monterey

Mr. Joe Milton (W/O Enclosure)
Sacramento

Regional Water Quality Control Board (W/O Enclosure)
Palm Desert

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (619) 339-4606
FAX: (619) 353-9420

AIR POLLUTION CONTROL DISTRICT

June 10, 1995

Ms. Milasol C. Gaslan, P.E.
Department of Toxic Substance Control
Region 4
245 West Broadway
Suite 425
Long Beach, CA 90802-4444

RE: Response to ARAR Requirements Naval Air Facility, El Centro, CA

Dear Ms. Gaslan:

Enclosed is the response to the ARAR requirements for the anticipated removal action at the Naval Air Facility sites 1, 2, 3, 4, and 8.

In general, all remediation projects (historically) have fallen under Rule 207, of the District Rules. Any long term (6 months or more) remediation projects involving large daily process rates may require mitigation beyond BACT (see rules and regulations summary).

If you have any questions regarding the response to the ARAR, you can contact me at (619) 339-4606.

Sincerely,

Gaspar Torres
Deputy Air Quality Control Officer

C:\WPDOCS\LETTERS\GASLAN.LTR

Site 1

Site 1- Magazine Road Landfill

Description

Site 1 is a 4 acre landfill used from 1965-1983 for disposal of wastes from on base activities The type of wastes and approximate quantities received at this landfill include household rubbish (1 million cubic feet), plating wastes (30,000 cubic feet) asbestos (5,000 cubic feet), water bearing fuels (458,000 gallons), hydraulic fluid (5,000 gallons), sandblast grit (90,000 lbs), batteries (2,000), pesticide (1,000 gallons), motor oil (10,000 gallons), photographic chemicals (unknown quantities). The wastes were burned once a month throughout operation of the landfill.

Contaminants detected

Metals, volatile organic compounds (VOCs), semi volatile organcis compounds(SVOC's), polychlorinated biphenyls(PCB), and petroleum hydrocarbon.

Removal Alternatives

90,000 cubic yards of soil

i) capping with irrigation restrictions, groundwter (GW) and soil vapor(SV) monitoring

ii) capping with slurry wall, GWand SV monitoring

iii) capping with GW and SV monitoring

APCD Requirements

Compliance with Regulations VIII of the Distict rules. Regulations requires fugitive dust control with visual inspections from APCD to determine compliance

Site 2

Site 2- Patrol Road Landfill

Description

Site 2 is a 30 acre landfill used from 1946 - 1965. The type of wastes and approximate quantities disposed of include household rubbish (3 million cubic feet), asbestos (50,000 cubic feet), water bearings fuel (458,000 gallons), hydraulic fluid (5,000 gallons) solvents (13,000 gallons), mercury amalgam (80 lbs), sandblast grit (100,000 lbs) , batteries (2,000), pesticides (1,000 gallons), acid (2,000 gallons), motor oil (10,000 gallons), photographic chemicals (unknown quantities), and

demolition debris (unknown quantities).

Site 2A is an expansion of site 2 and was used from 1959-1965. wastes disposed of were similar as site 2.

Contaminants Detected

Metals, organic lead, pesticides, petroleum hydrocarbons

Removal alternatives

The Navy has not provide us (DTSC) the removal alternatives for site 2 at this time We will request action specific ARARs when we receive the information

APCD Requirements

Compliance with Regulations VIII of the District rules. Regulations requires fugitive dust control with visual inspections from APCD to determine compliance. Any soil remediation will need to comply with Rules 201, 207, 404, 406. If APCD permits are required, the permittee will be required to operate under a conditional air permit.

Site3

Sludge Burial Area

Description

Site 3 is a 20 x 10 x 5 feet pit excavated for burial of sewage sludge from a drying bed in the sewage treatment plant in 1986 Approximately 800 cubic feet of sludge containing up to 480 parts per billion total cyanide and 800 ppb silver were buried at this site.

Contaminants Detected

metals, pesticides, SVOCs, petroleum hydrocarbons

Removal Alternatives

60 cubic yards of soil

i) excavation and off-site disposal

ii) excavation, stabilization and on site landfill (site 1) disposal disposal

iii) excavation, stabilization and on-site landfill (site) disposal

iv) excavation, soil washing with solid disposal at on-site landfill (site) and water disposal at waste water treatment (WWTP)

APCD Requirements

Compliance with Regulations VIII of the District rules Regulations requires fugitive dust control with visual inspections from APCD to determine compliance. Any soil remediation will need to comply with Rules 201, 207, 404, 406. If APCD permits are required, the permittee will be required to operate under a conditional air permit.

Site 4

4th Street Fire Fighting Training Area

Description

Site 4 is an earthen bearmed, 15 foot diameter pit used for fir fighting training from 1963-1975. The fuels and approximate quantities burned include jp-5 (2000.000 gallons) ,jp-4(300 gallons), AVGAS(500 gallons), MOGAS(1,000 gallons) diesel fuel #2 (700 gallons), and hydraulic fluid (20 gallons).

Contaminants Detected

metals, fluorine, petroleum hydrocarbons

Removal Alternatives

370 cubic yards of soil

i) excavation,, on-site thermal desorptoin and backfill
ii) excavation and off-site thermal desorption
iii) excavation, on-site exsitu bioremediation, and on-site landfill
(site) disposal

APCD Requirements

Compliance with Regulations VIII of the District rules Regulations requires fugitive dust control with visual inspections from APCD to determine compliance. Any soil remediation will need to comply with Rules 201, 207, 404, 406. If APCD permits are required, the permittee will be required to operate under a conditional air permit

Site 8

Scrap yard

Description

Site 8 is a 3 acre area used by the Defense Reutilization and Maaketing Office for storage of sellable metals from 1958 - 1982. Transformers and paint cans were stored at this site and empty transformers were removed in 1983.

Contaminants

metals, PCB, pesticide, toluene, methylene chloride, petroleum hydrocarbon

Removal Alternatives

3,500 cubic yards of soil

i) excavation, and offsite disposal
ii) excavation, soil washing,and solids disposal at on-site landfill (site) and water disposal at WWTP
iii) excavation, soil washing and solids disposal at an off-site and water disposal at WWIP

iv) excavation, stabilization and on-site landfill 9site1) disposal
v) excavation, stabilization and off-site landfill disposal

APCD Requirements

Compliance with Regulations VIII of the District rules Regulations requires fugitive dust control with visual inspections from APCD to determine compliance. Any soil remediation will need to comply with Rules 201, 207, 404, 406. If APCD permits are required, the permittee will be required to operate under a conditional air permit.

Summary of APCD Rules and Regulations

Regulation VIII	fugitive dust control
Rule 201	permit requirements
Rule 207	new source BACT requirement, emission limits based on available control achieved for that particular process mitigation beyond BACT may be required if project is long term and exceed criteria triggering levels of 137lbs/day
Rule 404	particulate matter process weight limits, limits based on process weight
Rule 406	.2 grains allowable from stack combustion contaminants

REGULATION VIII - FUGITIVE DUST REQUIREMENTS FOR CONTROL OF FINE PARTICULATE MATTER (PM-10) (ADOPTED 10-10-94)

A. GENERAL DESCRIPTION

The purpose of this regulation is to reduce the amount of fine Particulate Matter (PM-10) entrained in the ambient air as a result of emissions generated from anthropogenic (man-made) Fugitive Dust (PM-10) sources generated from within Imperial County by requiring actions to prevent, reduce, or mitigate PM-10 emissions. This Regulation contains EPA required Reasonably Available Control Measures (RACM) to be included in the Imperial County Air Pollution Control District (APCD) Non-Attainment Area Plan for attaining the National Ambient Air Quality Standards for PM-10.

B. APPLICABILITY

The requirements of this Regulation shall apply to any Active Operation, and/or man-made or man-caused condition or practice capable of generating Fugitive Dust (PM-10) as specified in this Regulation except those determined exempt as defined in Part E of this Regulation.

C. DEFINITIONS

For the purpose of this Regulation, the following terms are defined:

C.1 ACTIVE OPERATION: Activities capable of generating Fugitive Dust (PM-10) conducted for industrial, commercial, state, federal, city, county or special district purposes and their contractors, including but not limited to, Unpaved Roads, Track-Out/Carry-Out, Bulk Material storage and transport, Unpaved Haul/Access Roads.

C.2 APCD: The Imperial County Air Pollution Control District.

C.3 APCO: The Imperial County Air Pollution Control Officer.

C.4 BULK MATERIAL: Earth, rock, Silt, sediment, sand, Gravel, soil, fill, aggregate, dirt, mud, debris, and other organic and/or inorganic material consisting of or containing Particulate Matter with five percent or greater Silt content. Active Operations seeking to determine if the Silt content is less than five percent are required to conduct the laboratory analysis in accordance with ASTM method C-136. Attachment A is ASTM method C-136, attachment B is ASTM method D-75 for sampling aggregate material.

C.5 CANAL BANK: A rise of land on either side of an irrigation canal.

C.6 CHEMICAL STABILIZATION/SUPPRESSION: A means of Fugitive Dust (PM-10) control implemented to mitigate PM-10 emissions by applying petroleum resins, asphaltic emulsions, acrylics, adhesives, or any other materials approved for use by the California Air Resources Board (CARB), U.S. Environmental Protection Agency (EPA) and/or the APCO.

C.7 DESIGNATED REPRESENTATIVE: The agent for a Person. The Designated Representative shall be responsible for and have the full authority to implement RACM on behalf of the Person.

C.8 FUGITIVE DUST: The Particulate Matter entrained in the ambient air which is caused from man-made and natural activities such as, but not limited to, movement of soil, vehicles, equipment, blasting, and wind. This excludes Particulate Matter emitted directly in the exhaust of motor vehicles or other fuel combustion devices, from portable brazing, soldering, or welding equipment, pile drivers, and stack emissions from stationary sources.

C.9 GRAVEL: Gravel travelways shall have a three (3) inch minimum depth stabilized surface. The travelway shall have a relative compaction of not less than 90% as determined by Test Method No. California 216 of State of California, Business and Transportation Agency Department of Transportation, and conforming to the following grading:

Sieve Designation	Percent Passing
1 1/2"	100
3/4"	85-95
#4	55-75
#30	25-45
#200	15-25*
	*(with <5% Silt)

Reference: County of Imperial Department of Public Works Standard S-1101.

C.10 HAUL/ACCESS ROAD: Any on-site road used for commercial, industrial, institutional, and/or governmental traffic, excluding Haul/Access Roads used for agricultural operations.

C.11 HAUL TRUCK: Any fully or partially open-bodied licensed motor vehicle used for transporting Bulk Material for industrial or commercial purposes.

C.12 IMPLEMENT OF HUSBANDRY: An unlicensed vehicle which is used exclusively in the conduct of agricultural operations. An Implement of Husbandry does not include a vehicle if its existing design is primarily for the transportation of persons or property on a highway, unless specifically designated as such by some other provision of the Vehicle Code of California.

C.13 OFF-ROAD VEHICLE: Any nonstationary device, powered by an internal combustion engine or motor, used primarily off the highways to propel, move, or draw persons or property including any device propelled, moved, or drawn exclusively by human power, and used in, but not limited to, any of the following applications: marine vessels, construction/farm equipment, utility and lawn and garden equipment, off-road motorcycles, and off-highway vehicles.

C.14 PARTICULATE MATTER: Any material, except uncombined water, which exists in a finely divided form as a liquid or solid at 60 degrees F and one atmosphere pressure.

C.15 PAVED ROADS: An improved street, highway, alley, public way, that is covered by concrete, asphaltic concrete, or asphalt.

C.16 PERSON: Any individual, public or private corporation, partnership, association, firm, trust, estate, municipality, or any other legal entity whatsoever which is recognized by law as the subject of rights and duties, who is responsible for an Active Operation.

C.17 PHYSICAL STABILIZATION: A means of dust control implemented to mitigate PM-10 emissions by applying vegetation, Gravel, recrushed/recycled asphalt or any other materials or methods specified for use by U.S. EPA, CARB and/or the APCO.

C.18 PM-10: Particulate Matter with an aerodynamic diameter smaller than or equal to a nominal 10 microns as measured by the applicable State and Federal reference test methods.

C.19 REASONABLY AVAILABLE CONTROL MEASURE (RACM): A technique, practice, or procedure as identified in Section I of this Regulation that is used to prevent or minimize the generation, emission, entrainment, suspension and/or airborne transport of Fugitive Dust (PM-10).

C.20 SILT: Any aggregate material with a particle size less than 75 micrometers in diameter as measured by a No. 200 sieve as defined in ASTM D-2487 (attachment C, subsection 3.1.4 and as tested by ASTM-C-136 (attachment A).

C.21 TRACK-OUT/CARRY-OUT: Any and all Bulk Materials that adhere to and agglomerate on the exterior surfaces of motor vehicles and/or equipment (including tires) and excluding Implements of Husbandry and that may then fall onto the pavement.

C.22 TRACK-OUT PREVENTION DEVICE: A vibrating or tire spreading device to dislodge mud, dirt and/or debris from the tires and undercarriage of motor vehicles.

C.23 UNPAVED ROADS: Streets, alley ways, or roadways that are improved and maintained and that are not covered by one of the following: concrete, asphaltic concrete, asphalt, or other similar materials specified by the U.S. EPA, CARB and/or the APCO.

C.24 VMT: Vehicle miles traveled. Excluding any emergency operation and/or law enforcement activities performed to ensure public health and safety.

D. COMPLIANCE SCHEDULE

D.1 Existing sources subject to this Regulation shall comply with its requirements no later than 90 days after its adoption date.

D.2 New sources subject to this Regulation shall comply with its requirements prior to initiation of activity.

E. EXEMPTIONS

The following activities are exempt from provisions of this Regulation:

E.1 Actions required by the Federal or State Endangered Species Act or any order issued by a court or governmental agency.

E.2 Any operation already under Air Pollution Control District permit with requirements for PM-10 control, provided the control of fugitive PM-10 emissions is at least as stringent as required by this Regulation.

E.3 Agricultural operations including the growing, harvesting, tilling, cultivating and post harvesting of crops, or the raising of animals, fowl, or bees excepting the vehicle transportation, and vehicle hauling or other movement of the crops, animals, fowl or bees resulting from such operations and ingress to and egress from Paved Roads.

E.4 Non-routine or emergency maintenance of flood control channels and water spreading basins.

E.5 Paved and unpaved driveways serving single family residential dwellings.

E.6 Any emergency operation and/or law enforcement activities performed to ensure public health and safety.

E.7 Outdoor storage or handling of organic or inorganic fertilizer, grains, seed and feed which would be damaged by wetting.

E.8 Blasting operations permitted by the California Division of Industrial Safety.

E.9 The recreational use of public lands, including but not limited to Off-Road Vehicles, all-terrain vehicles, trucks, cars, motorcycles, motorbikes or motorbuggies.

F. REQUIREMENTS

F.1 Any Person who engages in any Active Operations identified in Section F of this Regulation VIII shall provide for the implementation and maintenance of one or more RACM, unless the implementation of such RACM endangers or could endanger the health or safety of the public.

F.2 Track Out/Carry Out: Any Person who causes the deposition of Bulk Material by tracking out or carrying out onto a Paved Road surface shall apply one or more applicable RACM to prevent or mitigate such deposition.

F.3 Unpaved Haul/Access Roads: No Person shall cause, suffer or allow the operation, use, or maintenance of any Unpaved Haul/Access Road of more than 1/2 mile in length at any work site without applying one or more appropriate RACM so as to affect at least 15% of the total road surface(s) or apply one or more RACM so as to achieve a level of control that is equivalent to 100% control of emissions from 15% of the total unpaved surface(s).

F.4 Unpaved Roads: All Persons who cause, suffer or allow the operation, use or maintenance of any Unpaved Road, greater than 3/4 mile in length, and with 20.0 or more average VMT per mile per day shall apply one or more appropriate RACM as to affect at least 15% of the total road surface(s) or apply one or more RACM so as to achieve a level of control that is equivalent to 100% control of emissions from 15% of the total unpaved surface(s).

F.5 Bulk Material Handling: No Person shall cause, suffer, allow or engage in any Bulk Material handling operation including, but not limited to, storage, stacking, loading, unloading, conveying and reclaiming of Bulk Material, for industrial or commercial purposes without applying one or more appropriate RACM.

F.6 Material Transport: No Person shall cause, suffer, allow or otherwise engage in the transportation of Bulk Materials for industrial or commercial purposes, without applying one or more appropriate RACM.

F.7 Haul Trucks: No Person shall cause, suffer, allow or otherwise engage in the use or operation of any Haul Truck, for industrial or commercial purposes, of transporting or storing Bulk Material without applying one or more appropriate RACM.

G. RECORD OF CONTROL IMPLEMENTATION

Any Person engaged in any Active Operation subject to this Regulation VIII shall maintain records of RACM sufficient to establish location, type and date of treatment. Records shall be maintained and be readily accessible for two years after the date of each entry and shall be provided to the APCD upon request and shall be open for inspection during unscheduled audits during normal business hours.

Persons who opt for the equivalency control in sections F.3 and/or F.4 must keep records to include equivalency formulas or factors with at least one sample calculation.

H. VIOLATIONS

Failure to comply with any provisions of this Regulation shall constitute a violation of this Regulation.

I. REASONABLY AVAILABLE CONTROL MEASURES FOR FUGITIVE DUST (PM-10)

I.1 UNPAVED HAUL AND ACCESS ROADS:

I.1.a Pave.

I.1.b Apply Physical/Chemical Stabilization as directed by product manufacturer to control dust on Unpaved Roads.

I.1.c Apply Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.

I.1.d Wetting. Apply water one or more times daily.

I.1.e Permanent road closure.

I.1.f Reduce vehicle speeds by 50%.

I.1.g Reduce vehicle trips by 50%.

I.2 UNPAVED ROADS:

I.2.a Pave.

I.2.b Apply Physical/Chemical Stabilization, as directed by product manufacturer to control dust on Unpaved Roads.

I.2.c Apply Gravel, recrushed/recycled asphalt or other material of low Silt (<5%) content to a depth of three or more inches.

I.2.d Reduce vehicle speeds by 50% .

I.2.e Reduce number of vehicle trips by 50%.

I.2.f Wetting. Apply water one or more times daily.

I.2.g Stocking of Triploid Grass Carp in canals to reduce maintenance vehicle trips along Canal Banks to mechanically remove aquatic weeds.

I.2.h Installation of remote control delivery gates to eliminate manual gate operation by maintenance personnel in vehicles along Canal Banks.

I.2.i Implement policies and training to emphasize:

I.2.i(1) regulated use of field-side Canal Banks for agricultural equipment parking/storage and agricultural commodity storage;

I.2.i(2) reduced speed along Canal Banks;

I.2.i(3) minimal use of Canal Banks for access to canal gate structures;

I.2.i(4) when feasible, restrict vehicle travel along Canal Bank to one side (opposite of field-side Canal Bank).

I.2.j Implement Silt removal program to emphasize delaying grading of spoil piles deposited on Canal Bank after cleaning operations until the next cleaning operation to eliminate vehicle access to Canal Bank.

I.2.k Permanent road closure.

I.2.l Conversion of open canals to pipeline.

I.2.m Lining canals to eliminate maintenance for Silt/weed control.

I.2.n Canal Bank surface maintenance.

I.3 TRACK OUT/CARRY OUT:

I.3.a Rapidly clean up, within 48 hours of deposition, any Bulk Material tracked out or carried out onto a Paved Road surface.

I.3.b Install one or more Track-Out Prevention Device or other APCO approved track out control device or wash down system at access points where unpaved traffic surfaces adjoin Paved Roads.

I.3.c Pave, Chemically Stabilize, or Gravel (using Gravel or other low Silt (<5%) content material), 50 or more consecutive feet at access points where Unpaved Roads adjoin Paved Roads.

I.4 BULK MATERIAL HANDLING/TRANSFER:

I.4.a Spray with water 15 minutes prior to handling and/or at points of transfer.

I.4.b Chemical/Physical Stabilization.

I.4.c Protect from wind erosion by sheltering or enclosing the operation and transfer line.

I.5 MATERIAL TRANSPORT/HAULING:

I.5.a Completely cover or enclose all Haul Truck loads of Bulk Material.

I.5.b Haul Trucks transporting loads of Bulk Materials shall not be required to cover their loads if the load, where it contacts the side, front, and back of the cargo container area remains six inches from the upper area of the container area, and if the load does not extend, at its peak, above any part of the upper edge of the cargo container area. (As defined in Section 23114 of the California Vehicle Code for both public and private roads.)

I.5.c The cargo compartment(s) of all Haul Trucks are to be constructed and maintained so that no spillage and loss of Bulk Material can occur from holes or other openings in the cargo compartment's floor, side, and/or tailgate. Seals on any openings used to empty the load including, but not limited to, bottom-dump release gates and tailgates to be properly maintained to prevent the loss of Bulk Material from those areas.

I.5.d The cargo compartment of all Haul Trucks are to be cleaned and/or washed at delivery site after removal of Bulk Material.

J. CALEXICO/MEXICALI CROSS-BORDER SOURCE APPORTIONMENT STUDY

A PM-10 monitoring program was completed in 1993 along the border between Imperial Valley California and the Mexicali Valley, Baja California, Mexico to determine the major contributors to PM-10 and to determine how much was contributed by transport across the international boundary. This study was funded by the U.S. Environmental Protection Agency and conducted by the University of Nevada, Desert Research Institute Energy and Environmental Engineering Center. This study is expected to be published in final form by the end of the first quarter of 1995. The Imperial County Air Pollution Control District (ICAPCD) will conduct a workshop on the study within thirty days of the formal publication date for the purpose of receiving public input on the results and recommendations contained therein. The comments received at that workshop and this Regulation will be reviewed by APCD staff and recommendations forwarded to the ICAPCD Board of Directors.

K. RACM IMPLEMENTATION

Reasonably Available Control Measure (RACM) implemented since the date of adoption of the State Implementation Plan (SIP) for PM-10 in the Imperial Valley (September 28, 1993) can be included as a portion of any amount of PM-10 control required in this Regulation.

ATTACHMENT A

Designation: C 136 – 84a

Standard Method for SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES[1]

This standard is issued under the fixed designation C 136; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This method has been approved for use by agencies of the Department of Defense and for listing in the DoD Index of Specifications and Standards.

1. Scope

1.1 This method covers the determination of the particle size distribution of fine and coarse aggregates by sieving.

1.2 Some specifications for aggregates which reference this method contain grading requirements including both coarse and fine fractions. Instructions are included for sieve analysis of such aggregates.

1.3 The values stated in acceptable metric units (SI units and units specifically approved in ASTM E 380 for use with SI units) are to be regarded as the standard. The values in parentheses are provided for information purposes only.

1.4 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Applicable Documents

2.1 *ASTM Standards:*

C 117 Test Method for Materials Finer Than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing[2]

C 670 Practice for Preparing Precision Statements for Test Methods for Construction Materials[2]

C 702 Methods for Reducing Field Samples of Aggregate to Testing Size[3]

D 75 Practice for Sampling Aggregates[3]

E 11 Specification for Wire-Cloth Sieves for Testing Purposes[4]

2.2 *AASHTO Standard:*

AASHTO No. T 27 Sieve Analysis of Fine and Coarse Aggregates[3]

3. Summary of Method

3.1 A weighed sample of dry aggregate is separated through a series of sieves of progressively smaller openings for determination of particle size distribution.

4. Significance and Use

4.1 This method is used primarily to determine the grading of materials proposed for use as aggregates or being used as aggregates. The results are used to determine compliance of the particle size distribution with applicable specification requirements and to provide necessary data for control of the production of various aggregate products and mixtures containing aggregates. The data may also be useful in developing relationships concerning porosity and packing.

4.2 Accurate determination of material finer than the 75-μm (No. 200) sieve cannot be achieved by use of this method alone. Test

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[1] This method is under the jurisdiction of ASTM Committee C-9 on Concrete and Concrete Aggregates and is the direct responsibility of Subcommittee C09.03.05 on Methods of Testing and Specifications for Physical Characteristics of Concrete Aggregates.

Current edition approved Oct. 26, 1984. Published December 1984. Originally published as C 136 – 38 T. Last previous edition C 136 – 83.

[2] *Annual Book of ASTM Standards*, Vols 04.02 and 04.01.

[3] *Annual Book of ASTM Standards*, Vol 04.02.

[4] *Annual Book of ASTM Standards*, Vol 14.02. Excerpts in all volumes.

[5] Available from [illegible]

ATTACHMENT B

Designation: D 75 – 82

Standard Practice for SAMPLING AGGREGATES[1]

This standard is issued under the fixed designation D 75; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This practice has been approved for use by agencies of the Department of Defense and for listing in the DoD Index of Specifications and Standards.

1. Scope

1.1 This practice covers sampling of coarse and fine aggregates for the following purposes:

1.1.1 Preliminary investigation of the potential source of supply.

1.1.2 Control of the product at the source of supply.

1.1.3 Control of the operations at the site of use, and

1.1.4 Acceptance or rejection of the materials.

NOTE 1—Sampling plans and acceptance and control tests vary with the type of construction in which the material is used. Attention is directed to Practices E 105 and D 3665.

2. Applicable Documents

2.1 *ASTM Standards:*

C 702 Methods for Reducing Field Samples of Aggregate to Testing Size[2]

D 2234 Methods for Collection of a Gross Sample of Coal[3]

D 3665 Practice for Random Sampling of Construction Materials[2,4]

E 105 Recommended Practice for Probability Sampling of Materials[5]

E 122 Recommended Practice for Choice of Sample Size to Estimate the Average Quality of a Lot or Process[5]

E 141 Recommended Practice for Acceptance of Evidence Based on the Results of Probability Sampling[5]

3. Significance and Use

3.1 Sampling is equally as important as the testing, and the sampler shall use every precaution to obtain samples that will show the nature and condition of the materials which they represent.

3.2 Samples for preliminary investigation tests are obtained by the party responsible for development of the potential source (Note 2). Samples of materials for control of the production at the source or control of the work at the site of use are obtained by the manufacturer, contractor, or other parties responsible for accomplishing the work. Samples for tests to be used in acceptance or rejection decisions by the purchaser are obtained by the purchaser or his authorized representative.

NOTE 2—The preliminary investigation and sampling of potential aggregate sources and types occupies a very important place in determining the availability and suitability of the largest single constituent entering into the construction. It influences the type of construction from the standpoint of economics and governs the necessary material control to ensure durability of the resulting structure, from the aggregate standpoint. This investigation should be done only by a responsible trained and experienced person. For more comprehensive guidance, see Appendix.

4. Securing Samples

4.1 *General*—Where practicable, samples to be tested for quality shall be obtained from the finished product. Samples from the finished product to be tested for abrasion loss shall not

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[1] This practice is under the jurisdiction of ASTM Committee D-4 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.50 on Methods of Sampling.

Current edition approved March 26, 1982. Published June 1982. Originally published as D 75 – 29 T. Last previous edition D 75 – 71 (1978).

[2] *Annual Book of ASTM Standards*, Vol 04.02.

[3] *Annual Book of ASTM Standards*, Vol 05.05.

[4] *Annual Book of ASTM Standards*, Vol 04.03.

[5] *Annual Book of ASTM Standards*, Vol 14.02.

A = weight of size increment on total sample basis,

W_1 = weight of fraction finer than 4.75-mm (No. 4) sieve in total sample,

W_2 = weight of reduced portion of material finer than 4.75-mm (No. 4) sieve actually sieved, and

B = weight of size increment in reduced portion sieved.

7.6 Unless a mechanical sieve shaker is used, hand sieve particles larger than 75 mm (3 in.) by determining the smallest sieve opening through which each particle will pass. Start the test on the smallest sieve to be used. Rotate the particles, if necessary, in order to determine whether they will pass through a particular opening; however, do not force particles to pass through an opening.

7.7 Determine the weight of each size increment by weighing on a scale or balance conforming to the requirements specified in 5.1 to the nearest 0.1 % of the total original dry sample weight. The total weight of the material after sieving should check closely with original weight of sample placed on the sieves. If the amounts differ by more than 0.3 %, based on the original dry sample weight, the results should not be used for acceptance purposes.

7.8 If the sample has previously been tested by Test Method C 117, add the weight finer than the 75-μm (No. 200) sieve determined by that method to the weight passing the 75-μm (No. 200) sieve by dry sieving of the same sample in this method.

8. Calculation

8.1 Calculate percentages passing, total percentages retained, or percentages in various size fractions to the nearest 0.1 % on the basis of the total weight of the initial dry sample. If the same test sample was first tested by Test Method C 117, include the weight of material finer than the 75-μm (No. 200) size by washing in the sieve analysis calculation; and use the total dry sample weight prior to washing in Test Method C 117 as the basis for calculating all the percentages.

8.2 Calculate the fineness modulus, when required, by adding the total percentages of material in the sample that is coarser than each of the following sieves (cumulative percentages retained), and dividing the sum by 100: 150-μm (No. 100), 300-μm (No. 50), 600-μm (No. 30), 1.18-mm (No. 16), 2.36-mm (No. 8), 4.75-mm (No. 4), 9.5-mm (3/8-in.), 19.0-mm (3/4-in.), 37.5-mm (1½-in.), and larger, increasing in the ratio of 2 to 1.

9. Report

9.1 Depending upon the form of the specifications for use of the material under test, the report shall include the following:

9.1.1 Total percentage of material passing each sieve, or

9.1.2 Total percentage of material retained on each sieve, or

9.1.3 Percentage of material retained between consecutive sieves.

9.2 Report percentages to the nearest whole number, except if the percentage passing the 75-μm (No. 200) sieve is less than 10 %, it shall be reported to the nearest 0.1 %.

9.3 Report the fineness modulus, when required, to the nearest 0.01.

10. Precision

10.1 The estimates of precision of this method listed in Table 1 are based on results from the AASHTO Materials Reference Laboratory Reference Sample Program, with testing conducted by this method and AASHTO Method T 27. While there are differences in the minimum weight of the test sample required for other nominal maximum sizes of aggregate, no differences entered into the testing to affect the determination of these precision indices. The data are based on the analyses of more than 100 paired test results from 40 to 100 laboratories. The values in the table are given for different ranges of percentage of aggregate passing one sieve and retained on the next finer sieve.

Method C 117 for material finer than 75-μm sieve by washing should be employed.

5. Apparatus

5.1 *Balances*—Balances or scales used in testing fine and coarse aggregate shall have readability and accuracy as follows:

5.1.1 For fine aggregate, readable to 0.1 g and accurate to 0.1 g or 0.1 % of the test load, whichever is greater, at any point within the range of use.

5.1.2 For coarse aggregate, or mixtures of fine and coarse aggregate, readable and accurate to 0.5 g or 0.1 % of the test load, whichever is greater, at any point within the range of use.

5.2 *Sieves*—The sieves shall be mounted on substantial frames constructed in a manner that will prevent loss of material during sieving. The sieves shall conform to Specification E 11. Sieves with openings larger than 125 mm (5 in.) shall have a permissible variation in average opening of ±2 % and shall have a nominal wire diameter of 8.0 mm (5/16 in.) or larger.

NOTE 1—It is recommended that sieves mounted in frames larger than standard 203-mm (8 in.) diameter frames be used for testing coarse aggregate.

5.3 *Mechanical Sieve Shaker*—A mechanical sieve shaker, if used, shall impart a vertical, or lateral and vertical, motion to the sieve, causing the particles thereon to bounce and turn so as to present different orientations to the sieving surface. The sieving action shall be such that the criterion for adequacy of sieving described in 7.4 is met in a reasonable time period.

NOTE 2—Use of a mechanical sieve shaker is recommended when the size of the sample is 20 kg or greater, and may be used for smaller samples, including fine aggregate. Excessive time (more than approximately 10 min) to achieve adequate sieving may result in degradation of the sample. The same mechanical sieve shaker may not be practical for all sizes of samples, since the large sieving area needed for practical sieving of a large nominal size coarse aggregate very likely could result in loss of a portion of the sample if used for a small sample of coarse aggregate or fine aggregate.

5.4 *Oven*—An oven of appropriate size capable of maintaining a uniform temperature of 110 ± 5°C (230 ± 9°F).

6. Sampling

6.1 Sample the aggregate in accordance with Practice D 75. The weight of the field sample shall be the weight shown in Practice D 75 or four times the weight required in 6.4 and 6.5 (except as modified in 6.6), whichever is greater.

6.2 Thoroughly mix the sample and reduce it to an amount suitable for testing using the applicable procedures described in Methods C 702. The sample for test shall be approximately of the weight desired when dry and shall be the end result of the reduction. Reduction to an exact predetermined weight shall not be permitted.

NOTE 3—Where sieve analysis, including determination of material finer than the 75-μm sieve, is the only testing proposed, the size of the sample may be reduced in the field to avoid shipping excessive quantities of extra material to the laboratory.

6.3 *Fine Aggregate*—The test sample of fine aggregate shall weigh, after drying, approximately the following amount:

Aggregate with at least 95 % passing a 2.36-mm (No. 8) sieve	100 g
Aggregate with at least 85 % passing a 4.75-mm (No. 4) sieve and more than 5 % retained on a 2.36-mm (No. 8) sieve	500 g

6.4 *Coarse Aggregate*—The weight of the test sample of coarse aggregate shall conform with the following:

Nominal Maximum Size, Square Openings, mm (in.)	Minimum Weight of Test Sample, kg (lb)
9.5 (⅜)	1 (2)
12.5 (½)	2 (4)
19.0 (¾)	5 (11)
25.0 (1)	10 (22)
37.5 (1½)	15 (33)
50 (2)	20 (44)
63 (2½)	35 (77)
75 (3)	60 (130)
90 (3½)	100 (220)
100 (4)	150 (330)
112 (4½)	200 (440)
125 (5)	300 (660)
150 (6)	500 (1100)

6.5 *Coarse and Fine Aggregate Mixtures*—The weight of the test sample of coarse and fine aggregate mixtures shall be the same as for coarse aggregate in 6.4.

6.6 The size of sample required for aggregates with large nominal maximum size is such as to preclude testing except with large mechanical sieve shakers. However, the intent of this method will be satisfied for samples of aggregate larger than 50 mm nominal maximum size if a smaller weight of sample is used, provided that the criterion for acceptance or rejection of the material is based on the average of results of several sam-

ATTACHMENT C

Designation: D 2487 – 93

Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)[1]

This standard is issued under the fixed designation D 2487; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense. Consult the DOD Index of Specifications and Standards for the specific year of issue which has been adopted by the Department of Defense.

1. Scope

1.1 This standard describes a system for classifying mineral and organo-mineral soils for engineering purposes based on laboratory determination of particle-size characteristics, liquid limit, and plasticity index and shall be used when precise classification is required.

NOTE 1—Use of this standard will result in a single classification group symbol and group name except when a soil contains 5 to 12 % fines or when the plot of the liquid limit and plasticity index values falls into the crosshatched area of the plasticity chart. In these two cases, a dual symbol is used, for example, GP-GM, CL-ML. When the laboratory test results indicate that the soil is close to another soil classification group, the borderline condition can be indicated with two symbols separated by a slash. The first symbol should be the one based on this standard, for example, CL/CH, GM/SM, SC/CL. Borderline symbols are particularly useful when the liquid limit value of clayey soils is close to 50. These soils can have expansive characteristics and the use of a borderline symbol (CL/CH, CH/CL) will alert the user of the assigned classifications of expansive potential.

1.2 The group symbol portion of this system is based on laboratory tests performed on the portion of a soil sample passing the 3-in. (75-mm) sieve (see Specification E 11).

1.3 As a classification system, this standard is limited to naturally occurring soils.

NOTE 2—The group names and symbols used in this test method may be used as a descriptive system applied to such materials as shale, claystone, shells, crushed rock, etc. See Appendix X2.

1.4 This standard is for qualitative application only.

NOTE 3—When quantitative information is required for detailed designs of important structures, this test method must be supplemented by laboratory tests or other quantitative data to determine performance characteristics under expected field conditions.

1.5 This standard is the ASTM version of the Unified Soil Classification System. The basis for the classification scheme is the Airfield Classification System developed by A. Casagrande in the early 1940's.[2] It became known as the Unified Soil Classification System when several U.S. Government Agencies adopted a modified version of the Airfield System in 1952.

1.6 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

C 117 Test Method for Materials Finer Than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing[3]

C 136 Method for Sieve Analysis of Fine and Coarse Aggregates[3]

C 702 Practice for Reducing Field Samples of Aggregate to Testing Size[3]

D 420 Guide for Investigating and Sampling Soil and Rock[4]

D 421 Practice for Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants[4]

D 422 Test Method for Particle-Size Analysis of Soils[4]

D 653 Terminology Relating to Soil, Rock, and Contained Fluids[4]

D 1140 Test Method for Amount of Material in Soils Finer than the No. 200 (75-μm) Sieve[4]

D 2216 Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock[4]

D 2217 Practice for Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants[4]

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)[4]

D 4083 Practice for Description of Frozen Soils (Visual-Manual Procedure)[4]

D 4318 Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils[4]

D 4427 Classification of Peat Samples by Laboratory Testing[4]

E 11 Specification for Wire-Cloth Sieves for Testing Purposes[3]

3. Terminology

3.1 *Definitions*—Except as listed below, all definitions are in accordance with Terminology D 653.

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[1] This standard is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.07 on Identification and Classification of Soils.

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[2] Casagrande, A., "Classification and Identification of Soils," *Transactions*, ASCE, 1948, p. 901.

[3] *Annual Book of ASTM Standards*, Vol 04.02.

[4] *Annual Book of ASTM Standards*, Vol 04.08.

NOTE 4—For particles retained on a 3-in. (75-mm) U.S. standard sieve, the following definitions are suggested:
Cobbles—particles of rock that will pass a 12-in. (300-mm) square opening and be retained on a 3-in. (75-mm) U.S. standard sieve, and
Boulders—particles of rock that will not pass a 12in. (300-mm) square opening

3.1.1 *gravel*—particles of rock that will pass a 3-in. (75-mm) sieve and be retained on a No. 4 (4.75-mm) U.S. standard sieve with the following subdivisions:
Coarse—passes 3-in. (75-mm) sieve and retained on ¾-in. (19-mm) sieve, and
Fine—passes ¾-in. (19-mm) sieve and retained on No. 4 (4.75-mm) sieve.

3.1.2 *sand*—particles of rock that will pass a No. 4 (4.75-mm) sieve and be retained on a No. 200 (75-μm) U.S. standard sieve with the following subdivisions:
Coarse—passes No. 4 (4.75-mm) sieve and retained on No. 10 (2.00-mm) sieve,
Medium—passes No. 10 (2.00-mm) sieve and retained on No. 40 (425-μm) sieve, and
Fine—passes No. 40 (425-μm) sieve and retained on No. 200 (75-μm) sieve.

3.1.3 *clay*—soil passing a No. 200 (75-μm) U.S. standard sieve that can be made to exhibit plasticity (putty-like properties) within a range of water contents and that exhibits considerable strength when air dry. For classification, a clay is a fine-grained soil, or the fine-grained portion of a soil, with a plasticity index equal to or greater than 4, and the plot of plasticity index versus liquid limit falls on or above the "A" line.

3.1.4 *silt*—soil passing a No. 200 (75-μm) U.S. standard sieve that is nonplastic or very slightly plastic and that exhibits little or no strength when air dry. For classification, a silt is a fine-grained soil, or the fine-grained portion of a soil, with a plasticity index less than 4 or if the plot of plasticity index versus liquid limit falls below the "A" line.

3.1.5 *organic clay*—a clay with sufficient organic content to influence the soil properties. For classification, an organic clay is a soil that would be classified as a clay except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.6 *organic silt*—a silt with sufficient organic content to influence the soil properties. For classification, an organic silt is a soil that would be classified as a silt except that its liquid limit value after oven drying is less than 75 % of its liquid limit value before oven drying.

3.1.7 *peat*—a soil composed of vegetable tissue in various stages of decomposition usually with an organic odor, a dark-brown to black color, a spongy consistency, and a texture ranging from fibrous to amorphous.

3.2 *Descriptions of Terms Specific to This Standard:*

3.2.1 *coefficient of curvature*, Cc—the ratio $(D_{30})^2/(D_{10} \times D_{60})$, where D_{60}, D_{30}, and D_{10} are the particle diameters corresponding to 60, 30, and 10 % finer on the cumulative particle-size distribution curve, respectively.

3.2.2 *coefficient of uniformity*, Cu—the ratio D_{60}/D_{10}, where D_{60} and D_{10} are the particle diameters corresponding to 60 and 10 % finer on the cumulative particle-size distribution curve, respectively.

4. Summary

4.1 As illustrated in Table 1, this classification system identifies three major soil divisions: coarse-grained soils, fine-grained soils, and highly organic soils. These three divisions are further subdivided into a total of 15 basic soil groups.

4.2 Based on the results of visual observations and prescribed laboratory tests, a soil is catalogued according to the basic soil groups, assigned a group symbol(s) and name, and thereby classified. The flow charts, Fig. 1 for fine-grained soils, and Fig. 2 for coarse-grained soils, can be used to assign the appropriate group symbol(s) and name.

5. Significance and Use

5.1 This standard classifies soils from any geographic location into categories representing the results of prescribed laboratory tests to determine the particle-size characteristics, the liquid limit, and the plasticity index.

5.2 The assigning of a group name and symbol(s) along with the descriptive information required in Practice D 2488 can be used to describe a soil to aid in the evaluation of its significant properties for engineering use.

5.3 The various groupings of this classification system have been devised to correlate in a general way with the engineering behavior of soils. This standard provides a useful first step in any field or laboratory investigation for geotechnical engineering purposes.

5.4 This standard may also be used as an aid in training personnel in the use of Practice D 2488.

5.5 This standard may be used in combination with Practice D 4083 when working with frozen soils.

6. Apparatus

6.1 In addition to the apparatus that may be required for obtaining and preparing the samples and conducting the prescribed laboratory tests, a plasticity chart, similar to Fig. 3, and a cumulative particle-size distribution curve, similar to Fig. 4, are required.

NOTE 5—The "U" line shown on Fig. 3 has been empirically determined to be the approximate "upper limit" for natural soils. It is a good check against erroneous data, and any test results that plot above or to the left of it should be verified.

7. Sampling

7.1 Samples shall be obtained and identified in accordance with a method or methods recommended in Recommended Guide D 420 or by other accepted procedures.

7.2 For accurate identification, the minimum amount of test sample required for this test method will depend on which of the laboratory tests need to be performed. Where only the particle-size analysis of the sample is required, specimens having the following minimum dry weights are required:

Maximum Particle Size, Sieve Opening	Minimum Specimen Size, Dry Weight
4.75 mm (No. 4)	100 g (0.25 lb)
9.5 mm (⅜ in.)	200 g (0.5 lb)
19.0 mm (¾ in.)	1.0 kg (2.2 lb)
38.1 mm (1½ in.)	5.0 kg (13 lb)
75.0 mm (3 in.)	60.0 kg (132 lb)

Whenever possible, the field samples should have weights two to four times larger than shown.

X2.3.3.3 Quantity and character of overburden.

X2.3.3.4 Length of haul to proposed site of work.

X2.3.3.5 Character of haul (kind of road, maximum grades, etc.)

X2.3.3.6 Details as to extent and location of material represented by each sample.

NOTE X2.2—A sketch of plans and elevations showing the thickness and location of different beds is recommended for this purpose.

separate samples should be drawn from separate areas of the pile.

X1.2.2 Where power equipment is not available, samples from stockpiles should be made up of at least three increments taken from the top third, at the middle point, and at the bottom third of the volume of the pile. A board shoved vertically into the pile just above the sampling point aids in preventing further segregation. In sampling stockpiles of fine aggregate the outer layer, which may have become segregated, should be removed and the sample taken from the material beneath. Sampling tubes approximately 1½-in. (30-mm) min by 6 ft (2-m) min in length may be inserted into the pile at random locations to extract a minimum of five increments of material to form the sample.

X1.3 Sampling from Transportation Units

X1.3.1 In sampling coarse aggregates from railroad cars or barges effort should be made to enlist the services of power equipment capable of exposing the material at various levels and random locations. Where power equipment is not available, a common procedure requires excavation of three or more trenches across the unit at points that will, from visual appearance, give a reasonable estimate of the characteristics of the load. The trench bottom should be approximately level, at least 1 ft (0.3 m) in width and in depth below the surface. A minimum of three increments from approximately equally spaced points along each trench should be taken by pushing a shovel downward into the material. Coarse aggregate in trucks should be sampled in essentially the same manner as for rail cars or barges, except for adjusting the number of increments according to the size of the truck. For fine aggregate in transportation units, sampling tubes as described in X1.2 may be used to extract an appropriate number of increments to form the sample.

X2. EXPLORATION OF POTENTIAL AGGREGATE SOURCES

X2.1 Scope

X2.1.1 Sampling for evaluation of potential aggregate sources should be performed by a responsible trained and experienced person. Because of the wide variety of conditions under which sampling may have to be done it is not possible to describe detailed procedures applicable to all circumstances. This appendix is intended to provide general guidance and list more comprehensive references.

X2.2 Sampling Stone from Quarries or Ledges

X2.2.1 *Inspection*—The ledge or quarry face should be inspected to determine discernible variations or strata. Differences in color and structure should be recorded.

X2.2.2 *Sampling and Size of Sample*—Separate samples having a mass of at least 50 lb (approximately 25 kg) should be obtained from each discernible stratum. The sample should not include material weathered to such an extent that it is no longer suitable for the purpose intended. One or more pieces in each sample should be at least 6 by 6 by 4 in. (150 by 150 by 100 mm) in size with the bedding plane plainly marked, and this piece should be free of seams or fractures.

X2.2.3 *Record*—In addition to the general information accompanying all samples the following information should accompany samples taken from ledges or quarry faces:

X2.2.3.1 Approximate quantity available. (If quantity is very large this may be recorded as practically unlimited.)

X2.2.3.2 Quantity and character of overburden.

X2.2.3.3 A detailed record showing boundaries and location of material represented by each sample.

NOTE X2.1—A sketch, plan, and elevation, showing the thickness and location of the different layers as recommended for this purpose.

X2.3 Sampling Roadside or Bank Run Sand and Gravel Deposits

X2.3.1 *Inspection*—Potential sources of bank run sand and gravel may include previously worked pits from which there is an exposed face or potential deposits discovered through air-photo interpretation, geophysical exploration, or other types of terrain investigation.

X2.3.2 *Sampling*—Samples should be so chosen from each different stratum in the deposit discernible to the sampler. An estimate of the quantity of the different materials should be made. If the deposit is worked as an open-face bank or pit, samples should be taken by channeling the face vertically, bottom to top, so as to represent the materials proposed for use. Overburden or disturbed material should not be included in the sample. Test holes should be excavated or drilled at numerous locations in the deposit to determine the quality of the material and the extent of the deposit beyond the exposed face, if any. The number and depth of test holes will depend upon the quantity of the material needed, topography of the area, nature of the deposit, character of the material, and potential value of the material in the deposit. If visual inspection indicates that there is considerable variation in the material, individual samples should be selected from the material in each well defined stratum. Each sample should be thoroughly mixed and quartered if necessary so that the field sample thus obtained will be at least 25 lb (12 kg) for sand and 75 lb (35 kg) if the deposit contains an appreciable amount of coarse aggregate.

X2.3.3 *Record*—In addition to the general information accompanying all samples the following information should accompany samples of bank run sand and gravel:

X2.3.3.1 Location of supply.

X2.3.3.2 Estimate of approximate quantity available.

REGULATION II - PERMITS
AMENDED NOVEMBER 19, 1985

RULE 201 - PERMITS REQUIRED:

A. Authority to Construct:

Each person constructing, erecting, installing, modifying, or replacing any article, machine, equipment or contrivance, the use of which may emit or control air contaminants, shall first obtain written authorization for such construction from the Control Officer, except as may be exempted herein.

B. Permit to Operate:

Subject to the exemptions contained in Rule 202 of this part, each person who uses or operates any article, machine, equipment, or other contrivance that emits or controls air contaminants is required to have a permit. A single Permit to Operate may be issued for all components of an integrated system or process.

C. Other Permits:

Agricultural Burning permits are provided for in Regulation VII. Feedlot certificates are provided for in Rule 420. Non-agricultural burning permits are provided for in Rule 422.

D. Posting of Permit:

A person who has been granted a Permit to Operate any article, machine, equipment, or other contrivance described in this rule, shall firmly affix such permit, an approved facsimile, or other approved identification bearing the permit number upon the article, machine, equipment, or other contrivance in such a manner as to be clearly visible and accessible, in the event that the article, machine, equipment, or other contrivance is so constructed or operated that the Permit to Operate cannot be so placed, the Permit to Operate shall be mounted so as to be clearly visible in an accessible place within 25 feet of the article, machine, equipment, or other contrivance, or maintained readily available at all times on the operating premises.

E. Altering of Permit:

A person shall not wilfully deface, alter, forge, counterfeit, or falsify any permit issued by the District.

RULE 207- NEW AND MODIFIED STATIONARY SOURCE REVIEW (Revised 09-07-93)

A. GENERAL

A.1 PURPOSE:

A.1.a This regulation establishes preconstruction review requirements for new and modified stationary sources to ensure the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards.

A.1.b This regulation shall provide for no net increase in emissions, pursuant to Section 40918 of the Health and Safety Code, from new or modified stationary sources which emit or have the potential to emit 137 pounds per day or more of any nonattainment pollutant or its precursors.

A.2 APPLICABILITY:

A.2.a This regulation shall apply to all new stationary sources and all modifications to existing stationary sources which are subject to District permit requirements, and after construction, emit or have the potential to emit one or more affected pollutants.

A.2.b Applications received by the District shall be subject to the requirements of this regulation in effect at the time such application is deemed complete.

B. DEFINITIONS

B.1 ACTUAL EMISSIONS: Measured or estimated emissions which most accurately represent the emissions from an emissions unit. Determination of actual emissions must be based on average actual production rates, fuel consumption and/or throughput rates from the last three years. Emission factors shall be established by source testing or obtained from AP-42 or other approved source.

B.2 ACTUAL EMISSION REDUCTIONS: Reductions of actual emissions from an emissions unit selected for emission offsets or banking. Actual emission reductions shall be calculated pursuant to Section E.5 of this regulation and meet the following criteria:

B.2.a Shall be real, enforceable, quantifiable, and permanent.

B.2.b Shall be in excess of any emissions reduction which is:

B.2.b.1 required or encumbered by any applicable laws, rules, regulations, agreements, orders, or

B.2.b.2 attributed to a control measure noticed in the District for workshop, or

B.2.b.3 contained in an adopted State Implementation Plan or California Clean Air Act Attainment Plan applicable to the District.

B.2.c Emission reductions attributed to a proposed control measure, may be reeligible as an actual emission reduction in the following circumstances:

B.2.c.1 for control measures identified in a district air quality plan or state implementation plan, no rule has been adopted within two years from the scheduled adoption date, provided, however, the Control Officer has not extended the scheduled adoption date.

B.2.c.2 for control measures not identified in a district air quality plan or state implementation plan, no rule has been adopted within two years from the date of the latest public workshop notice.

B.2.d Emission reductions achieved before Clean Air Act Amendments of 1990 must be included in the inventory as growth to be eligible for use.

B.3 ACTUAL INTERRUPTIONS OF POWER: When electrical service is interrupted by an unforeseeable event or when the power reserves of the serving utility fall below 5 percent.

B.4 AFFECTED POLLUTANTS: Pollutants for which ambient air quality standards have been established by the Environmental Protection Agency or the California Air Resources Board and the precursors to such pollutants, and those pollutants regulated by the Environmental Protection Agency under the Clean Air Act or by the California Air Resources Board under the Health and Safety Code, including reactive organic compounds (ROC), nitrogen oxides (NOx), sulfur oxides (SOx), PM10, carbon monoxide (CO), lead, asbestos, beryllium, mercury, vinyl chloride, fluorides, sulfuric acid mist, hydrogen sulfide, and total reduced sulfur compounds. Also those pollutants which the Environmental Protection Agency, after notice and opportunity for public comment, or the California Air Resources Board or the Air Pollution Control Board after public hearing, determine may have a significant

adverse effect on the environment, the public health, or the public welfare.

B.5 AMBIENT AIR QUALITY STANDARDS: For the purposes of this regulation ambient air quality standards shall be interpreted to include state and federal ambient air quality standards. For the purposes of submittal of this regulation to the Environmental Protection Agency for inclusion in the California State Implementation Plan all references in this regulation to Ambient Air Quality Standards shall be interpreted as National Ambient Air Quality Standards.

B.6 BEGIN ACTUAL CONSTRUCTION: Means in general, initiation of physical on-site construction activities on an emissions unit which are of a permanent nature. Such activities include, but are not limited to, installation of building supports and foundations, laying of underground pipework, and construction of permanent storage structures. With respect to a change in method of operating this term refers to those on-site activities other than preparatory activities which mark the initiation of the change.

B.7 BEST AVAILABLE CONTROL TECHNOLOGY (BACT): For any emissions unit the more stringent of:

B.7.a The most effective emission control device, emission limit, or technique which has been required and used for such class or category of source unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations required on other emissions units have not been demonstrated to be achievable;

B.7.b Any other alternative emission control device, emission control technique, basic equipment, fuel, or process determined to be technologically feasible and cost-effective by the Air Pollution Control Officer. Cost-effectiveness analyses shall be performed in accordance with methodology and criteria specified in the Best Available Control Technology Guideline for the South Coast Air Quality Management District, or an alternative methodology and criteria acceptable to the Air Pollution Control Officer.

Under no circumstances shall BACT be determined to be less stringent than the emission control required by any applicable provision of laws or regulations of the District, State and federal government, or State Implementation Plan, unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that such limitations are not technologically achievable. In no event shall the application of BACT result in the emissions of any pollutant

which exceeds the emissions allowed by any applicable New Source Performance Standard (40 CFR, part 60) or National Emission Standard for Hazardous Air Pollutants (40 CFR, part 61).

B.8 CARGO CARRIERS: Cargo carriers are trains dedicated to a specific stationary source. For purposes of this rule, the term "trains dedicated to a specific stationary source" shall not include any train for which the prime mover is owned and operated by a common carrier, and by which cargo is delivered to or from the stationary source under a contract of common carriage. The emissions from all trains dedicated to a specific stationary source, while operating in the district, including directly emitted and fugitive emissions shall be considered as emissions from the stationary source.

B.9 COMMENCE: As applied to construction of a major stationary source or major modification means that the owner or operator has all necessary preconstruction approvals or permits and either has:

B.9.a Begun, or caused to begin, a continuous program of actual on-site construction of the source, to be completed within a reasonable time; or

B.9.b Entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of actual construction of the source to be completed within a reasonable time.

B.10 COMPLETE APPLICATION: Completeness of an application for an authority to construct a new or modified emissions unit shall be evaluated on the basis of a list of required information which has been adopted by the District pursuant to Article 3, Sections 65940 through 65944 of Chapter 4.5 of Division 1 of Title 7 of the California Government Code as they exist on the date on which the application is received.

B.11 CONSTRUCTION: Means any physical change or change in the method of operation (including fabrication, erection, installation, demolition, or modification of an emissions unit) which would result in a change in actual emissions.

B.12 CONTIGUOUS PROPERTY: Two or more parcels of land with a common boundary or separated solely by a public or private roadway or other public right-of-way.

B.13 DAILY EMISSIONS LIMITATION: One or a combination of permit conditions specific to an emissions unit which restricts its maximum daily emissions, in pounds per day, at or below the emissions associated with the maximum design capacity. A

daily emissions limitation must be:

B.13.a Contained in the latest authority to construct an contained in or enforceable by the latest permi to operate for the emission unit, and

B.13.b Enforceable on a daily basis, and

B.13.c Established pursuant to a permitting action occurring after September 7, 1993, and used in th calculation of the stationary source daily potential to emit.

B.14 EMISSIONS UNIT: An identifiable operation or piece o process equipment such as an article, machine, or other contrivance which emits, has the potential to emit, or results in the emissions of any affected pollutant directly or as fugitive emissions.

B.15 FLUORIDES: Elemental fluorine and all fluoride compounds.

B.16 FUGITIVE EMISSIONS: Those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening.

B.17 HALOGENATED HYDROCARBONS: For the purposes of regulation, halogenated hydrocarbons are 1,1,1-t chloroethane, trichlorofluoromethane (CFC-11), dichlo difluoromethane (CFC-12), chlorodifluoromethane (CFC-22), trifluoromethane (CFC-23), methylene chloride, trichlorotrifluoroethane (CFC- 113), dichlorotetrafluoroethane (CFC-114), and chloropentafluoroethane (CFC-115).

B.18 IDENTICAL EMISSIONS UNIT: An emissions unit that replaces an existing emissions unit and satisfies all of the following criteria:

B.18.a Performs the same operation(s) as the emissions unit being replaced, and

B.18.b Manufactured by the same company, and has the same make, model, size and rating, and

B.18.c Expected actual emissions are less than or equal to those from the emissions unit being replaced.

B.19 MAJOR STATIONARY SOURCE: A stationary source whose potential to emit exceeds: 100 tons per year of nitrogen oxides, sulfur oxides, reactive organic compounds, carbon monoxide, PM10, or levels specified in the Clean Air Act of 1990, Section 112(a)(1).

B.20 MAJOR MODIFICATION: Modification to a major stationary source which results in an emissions increase, as calculated in Section E.3, greater than: 40 tons per year of nitrogen oxides, sulfur oxides, or reactive organic compounds, 100 tons per year of carbon monoxide, or 15 tons per year of PM10.

B.21 MODIFICATION: Any physical change, change in method of operation of, or addition to, an existing emissions unit, or any change in hours of operation or production rate which would necessitate a change in permit conditions, except that routine maintenance or repair shall not be considered to be a physical change.

Unless previously limited by a permit condition, the following shall not be considered changes in method of operation:

B.21.a Change in ownership of an existing stationary source with valid permit(s) to operate.

B.21.b Replacement of an existing emissions unit with an identical emissions unit.

B.21.c Replacement of part of an emissions unit providing the total fixed capital cost of the replacement part(s) does not exceed 50 percent of the fixed capital cost of an entirely new emissions unit and emissions are less than or equal to those from the original emissions unit.

A modification of an emissions unit also occurs when there is an increase in emissions from such unit caused by a modification of the stationary source and the emissions unit is not subject to a daily emissions limitation.

A modification to a stationary source shall include any modification of its permitted emissions units or addition of any new emissions units.

A reconstructed stationary source shall be treated as a new stationary source and not as a modification.

B.22 NONATTAINMENT POLLUTANT: Any pollutant which has been designated "nonattainment" pursuant to final rule-making by the Environmental Protection Agency published in the Federal Register, or which has been designated nonattainment by the Air Resources Board pursuant to Section 39607 of the Health and Safety Code. Any pollutant which is a precursor to a nonattainment pollutant is, itself, a nonattainment pollutant.

B.23 PM10: Particulate matter with aerodynamic diameter smaller than or equal to a nominal 10 microns as measured by applicable reference test method, or methods found in Article 2, Subchapter 6, Title 17, California Code of Regulations (commencing with Section 94100).

B.24 POTENTIAL TO EMIT: The maximum capacity of an emissions unit to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including pollution control equipment and restrictions in hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is incorporated into the applicable permit as an enforceable permit condition.

B.25 PRECURSOR: A directly emitted air contaminant that, when released into the atmosphere forms or causes to be formed or contributes to the formation of a pollutant for which a state or national ambient air quality standard has been adopted. The following precursor/pollutant relationships shall be used for the purposes of this regulation.

PRECURSOR	SECONDARY AIR CONTAMINANT
Reactive Organic Compounds	a. Photochemical oxidants (Ozone) b. The organic fraction of PM10
Nitrogen Oxides	a. Nitrogen dioxide b. The nitrate fraction of PM10 c. Photochemical oxidants (Ozone)
Sulfur Oxides	a. Sulfur dioxide b. Sulfates c. The sulfate fraction of PM10

B.26 REACTIVE ORGANIC COMPOUND: Any compound containing carbon except: methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonates, and halogenated hydrocarbons.

B.27 RECONSTRUCTED STATIONARY SOURCE: Any stationary source undergoing physical modification where the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost of a comparable entirely new stationary source. Fixed capital cost means that capital needed to provide all the depreciable components.

B.28 SEASONAL SOURCE: Any source with more than 90 percent of its annual emissions within a consecutive 120 day period.

B.29 STATIONARY SOURCE: Any building, structure, facility, or emissions unit which emits or may emit any affected pollutant directly or as a fugitive emission.

Building, structure, or facility includes all pollutant emitting activities, including emissions units, which:

B.29.a Are located on one or more contiguous or adjacent properties, and

B.29.b Are under the same or common ownership or operation, or which are owned or operated by entities which are under common control, and

B.29.c Belong to the same industrial grouping either by virtue of falling within the same two-digit standard industrial classification code or by virtue of being part of a common industrial process, manufacturing process, or connected process involving a common raw material.

B.30 TOTAL REDUCED SULFUR COMPOUNDS: The sulfur compounds methyl mercaptan, dimethyl sulfide, dimethyl disulfide, carbon disulfide, and carbonyl sulfide.

B.31 UPWIND AREA: The area bounded by a line passing through the site of the new or modified source perpendicular to the predominant summer wind flow line and extending to the boundaries of the same air basin in the direction opposite the predominant summer wind flow, except where the Air Pollution Control Officer determines that for reasons of topography or meteorology such a definition is inappropriate.

C. STANDARDS

C.1 BEST AVAILABLE CONTROL TECHNOLOGY: An applicant shall apply Best Available Control Technology to any new emissions unit or modification of an existing emissions unit which has the potential to emit 25 pounds per day or more of any nonattainment pollutant or its precursors, except for the following:

C.1.a Any new emissions unit or modification of an existing emissions unit for which the emissions change, calculated pursuant to Subsection E.4, is less than the following quantities:

Pollutant	lb/day
Carbon monoxide (attainment areas only)	550
Lead	3.3
Asbestos	0.04
Beryllium	0.0022

Mercury	0.
Vinyl chloride	5
Fluorides	16
Sulfuric acid mist	38
Hydrogen sulfide	55
Total reduced sulfur compounds	55

C.1.b Cargo Carriers

C.1.c New emissions unit or modification of an existing emissions unit solely for the purpose of compliance with District, State, or federal air pollution control laws, regulations, or orders, as approved by the Air Pollution Control Officer, and provided there is no increase in permitted production rate, operating schedule, or maximum equipment rating. This exemption applies only to the pollutant for which compliance with District, State, or federal air pollution control laws, regulations, or orders is required.

C.1.d New emissions unit or modification of an existing emissions unit for voluntary reduction in emissions for the sole purpose of generating emission reduction credits. This exemption applies only to the pollutant for which emission reduction credits are obtained.

C.2 OFFSET REQUIREMENTS, GENERAL: Offsets are actual emission reductions, calculated pursuant to Part E of this regulation, sufficient to offset emission increases from a new or modified emissions unit. A new or modified emissions unit subject to the offset requirements of this regulation shall provide offsets for each calendar quarter as specified in Subsection C.3.a.

C.2.a Offsets shall be required for a new or modified stationary source with a daily potential to emit, calculated pursuant to Subsection E.7, equal to or exceeding the following:

Pollutant	lb/day
Reactive organic compounds	137
Nitrogen oxides	137
Sulfur Oxides	137
PM10	137
Carbon Monoxide (nonattainment areas)	137

C.2.b An existing stationary source with a potential to emit equal to or exceeding 137 pounds per day of nitrogen oxides, reactive organic compou carbon monoxide, sulfur oxides, or PM10, as September7, 1993, shall offset all emission

increases, including cargo carrier emissions, from any new or modified emissions unit at the stationary source occurring after September 7, 1993.

C.2.c A new stationary source or modification of an existing stationary source which, on or after September 7, 1993, will result in a potential to emit for a stationary source of 137 pounds per day or more of nitrogen oxides, reactive organic compounds, carbon monoxide, sulfur oxides, or PM10, shall offset all emission increases, including cargo carrier emissions, in excess of 137 pounds per day of nitrogen oxides, reactive organic compounds, carbon monoxide, sulfur oxides, or PM10. After the potential to emit for a stationary source has exceeded these levels and the applicant has provided actual emissions reductions to offset emission increases in excess of these levels, all future emission increases from new or modified emissions units shall be offset.

C.2.d The PM10 emissions from an existing stationary source shall be recalculated from the total suspended particulate emissions increases and decreases which have occurred since July 1, 1987, using applicable PM10 emission factors. When applicable PM10 emissions factors do not exist, assume 50% of the total suspended particulates is PM10.

If the applicant has provided full offsets for total suspended particulate matter emissions occurring since July 1, 1987, but before September 7, 1993, those total suspended particulate matter emissions need not be recalculated as PM10. However, any subsequent increase in PM10 emissions shall be subject to the offset requirements of Subsections C.2.a, C.2.b, and C.2.c

C.2.e In no case shall halogenated hydrocarbons be used as offsets for reactive organic compounds.

C.2.f The Air Pollution Control Officer may exempt an applicant from the requirements of Sections C.2 and C.3 of this regulation for equipment to be used exclusively as emergency standby equipment for nonutility electrical power generation and not used in conjunction with any utility voluntary demand reduction program, provided:

C.2.f.1 Operation for maintenance purposes shall

be limited to 100 hours per year, and such maintenance shall be scheduled in cooperation with the District so as to have no adverse air quality impact, and to maintain Reasonable Further Progress, and

C.2.f.2 Operation for other than maintenance purposes shall be limited to actual interruptions of power by the serving utility.

Appropriate recordkeeping shall be required to verify and maintain any exemption.

C.2.g Offsets for increases in carbon monoxide emissions in attainment areas shall not be required if the applicant demonstrates to the satisfaction of the Air Pollution Control Officer, pursuant to Part F of this regulation, that carbon monoxide ambient air quality standards are not violated in the areas to be affected, and the carbon monoxide emission increases will not cause or contribute to a violation of ambient air quality standards.

C.3 LOCATION OF OFFSETS AND OFFSET RATIOS:

C.3.a A new or modified stationary source subject to the offset requirements of this regulation shall provide offsets for each calendar quarter equal to the positive emissions change for each calendar quarter, calculated in accordance with Part E of this regulation, and multiplied by the appropriate offset ratio listed in the following table:

LOCATION	OFFSET RATIO
Within the same source	1 to 1
Within 50 miles of the source	1.2 to 1
More than 50 miles from the source, and within air basin	Determined by APCO but no greater than 3 to 1 or less than 1.2 to 1

C.4 OFFSET REQUIREMENTS:

C.4.a Offsets which are obtained pursuant to Sections C.2 and C.3 in a district other than that in which the proposed source is located, and within the same air basin, may be used only if the Air

Pollution Control Officer has reviewed the permit conditions issued by the air pollution control district in which the proposed offsets are obtained and certifies that such offsets meet the requirements of this regulation and will not be used as mitigation for any other new or modified emissions units.

C.4.b Interpollutant offsets may be approved by the Air Pollution Control Officer on a case-by-case basis, provided that the trade is technically justified and that the applicant demonstrates to the satisfaction of the Control Officer that the emissions from the new or modified source will not cause or contribute to a violation of an ambient air quality standard. In such cases, the Air Pollution Control Officer shall, based on an air quality analysis, impose offset ratios equal to or greater than those required in Section C.3 of this regulation.

Interpollutant trades between PM10 and PM10 precursors may be allowed. PM10 emissions reductions shall not be allowed to offset nitrogen oxide or reactive organic compounds emissions increases in ozone nonattainment areas. PM10 emissions reductions shall not be allowed to offset sulfur oxide emissions increases in sulfate nonattainment areas.

C.4.c Offsets for new or modified stationary sources shall occur during the same time period as the stationary source will operate, unless otherwise approved by the Air Pollution Control Officer and the Air Resources Board.

C.4.d Existing source shutdowns or permanent curtailments in production or operating hours before an application is filed may not be used as offsets for emissions from a major source or a major modification.

C.5 ADDITIONAL SOURCE REQUIREMENTS:

C.5.a Alternative Siting: Sources for which an analysis of alternative sites, sizes, and production processes is required under Section 172 of the Federal Clean Air Act, the applicant shall prepare an analysis functionally equivalent to the requirements of Division 13, Section 21000 et. seq. of the Public Resources Code.

C.5.b Ambient Air Quality Standards:

C.5.b.1 Emissions from a new or modified emissions unit shall not cause or worse a violation of an ambient air quality standard. Part F of this regulation shall be used to estimate the effects of a new or modified emissions unit. In making this determination the Air Pollution Control Officer shall take into account the increases in minor and secondary source emissions as well as the mitigation of emissions through offsets obtained pursuant to this regulation.

C.5.b.2 At the discretion of the Air Pollution Control Officer, a new or modified emissions unit shall be exempt from the provisions of Subsection C.5.b.1 provided:

a. offsets have been provided for all increases in permitted emissions including fugitive, cargo carrier, and secondary emissions, or

b. the emissions unit is not subject to the Best Available Control Technology and offset requirements of this rule.

C.5.c Compliance by Other Owned, Operated, or Controlled Sources: The owner or operator of a proposed new or modified emissions unit shall demonstrate to the satisfaction of the Air Pollution Control Officer that all major stationary sources owned or operated by such person (or by any entity controlling, controlled by, or under common control of such person) in California which are subject to emission limitations are in compliance or on a schedule for compliance with all applicable emission limitations and standards.

D. ADMINISTRATIVE REQUIREMENTS:

The following administrative requirements shall apply to all applications for a new or modified emissions unit, except for the review of power plants over 50 megawatts. Power plants over 50 megawatts shall be subject to the administrative requirements of Section D.9.

D.1 COMPLETE APPLICATION: The Air Pollution Control Officer shall determine whether the application is complete later than 30 days after receipt of the application, after such longer time as both the applicant and the Air

Pollution Control Officer may agree. If the Air Pollution Control Officer determines that the application is not complete, the applicant shall be notified in writing of the decision specifying the information required. Upon receipt of any re-submittal of the application, a new 30-day period to determine completeness shall begin. Completeness of an application or resubmitted application shall be evaluated on the basis of the information requirements established by the District. Upon determination that the application is complete, the Air Pollution Control Officer shall notify the applicant in writing. The Air Pollution Control Officer may, during the processing of the application, request an applicant to clarify, amplify, correct, or otherwise supplement the information submitted in the application.

D.2 PRELIMINARY DECISION: Following acceptance of an application as complete, the Air Pollution Control Officer shall perform the evaluations required to determine compliance with all applicable district rules and regulations and make a preliminary written decision as to whether an Authority to Construct should be approved, conditionally approved, or disapproved. The Air Pollution Control Officer shall deny any application for Authority to Construct if the Control Officer finds that the subject of the application would not comply with the requirements of this regulation or any other District rule. The decision shall be supported by a succinct written analysis.

D.3 NOTIFICATION AND PUBLICATION OF PRELIMINARY DECISION:

D.3.a Within 10 calendar days following the preliminary decision, the Air Pollution Control Officer shall publish in at least one newspaper of general circulation in the District a notice stating the preliminary decision, noting how pertinent information can be obtained, and inviting written public comment for a 30-day period following the date of publication.

D.3.b The District shall transmit to the applicant, the Air Resources Board, the Environmental Protection Agency, and to any person requesting such information its preliminary written decision (including proposed conditions of approval represented by permit conditions), the Air Pollution Control Officer's analysis, and a copy of the notice submitted for publication, no later than the date of publication as required in subsection D.3.a.

D.3.c The requirements of subsections D.3.a and D.3.b, relating to notification and publication of the Air Pollution Control Officer's preliminary decisions, do not apply if the application is for

a new or modified stationary source with a potential to emit less than 100 pounds per day nitrogen oxides, reactive organic compou carbon monoxide (nonattainment areas only), sulfu oxides, or PM10, and 550 pounds per day of carbon monoxide in attainment areas.

D.4 PUBLIC INSPECTION: The Air Pollution Control Officer shall make available for public inspection at the Air Pollution Control District's office, the information submitted by the applicant and the Air Pollution Control Officer's analysis no later than the date the preliminary decision is published, pursuant to Section D.3. Information submitted which contains trade secrets shall be handled in accordance with Section 6254.7 of the California Government Code and relevant sections of the California Administrative Code.

D.5 AUTHORITY TO CONSTRUCT, FINAL ACTION: Within 180 days after acceptance of an application as complete, or within 180 days after the designated lead agency has approved the project under the California Environmental Quality Act, whichever occurs later, the Air Pollution Control Officer shall take final action on the application after considering all written comments. The Air Pollution Control Officer shall provide written notice of the final action to the applicant the Environmental Protection Agency, and the Air Resour Board and shall publish such notice in a newspaper general circulation in the District. The Air Polluti Control Officer shall make available for public inspection at the District Office a copy of the notice submitted for publication and all supporting documents.

D.5.a The requirements of Section D.5 relating to notification and publication of the Air Pollution Control Officer's action, do not apply if the application is for a new or modified stationary source with a potential to emit less than 100 pounds per day of nitrogen oxides, reactive organic compounds, carbon monoxide (nonattainment areas only), sulfur oxides, or PM10, and 550 pounds per day of carbon monoxide in attainment areas.

D.6 AUTHORITY TO CONSTRUCT - GENERAL CONDITIONS:

D.6.a An Authority to Construct shall not be issued unless the new or modified emissions unit complies with the provisions of this regulation and all applicable District rules and regulations.

D.6.b An Authority to Construct shall require a new or modified emissions unit be built in accordan with specifications and plans contained in t application and approved by the Air Pollution

Control Officer.

D.6.c An Authority to Construct shall contain all conditions deemed necessary by the Air Pollution Control Officer to assure construction and operation of an emissions unit in the manner assumed in making the analysis to determine compliance with this regulation and all applicable District rules and regulations.

D.6.d An Authority to Construct shall include all conditions deemed necessary by the Air Pollution Control Officer to assure compliance with the offset requirements of this regulation.

D.7 PERMIT TO OPERATE - GENERAL CONDITIONS:

D.7.a A Permit to Operate shall require that a new or modified emissions unit be operated in the manner assumed in making the analysis to determine compliance with this regulation and all applicable District rules and regulations and as conditioned in the Authority to Construct.

D.7.b A Permit to Operate shall include daily emission limitations which reflect applicable emission limitations.

D.7.c Prior to the issuance of a Permit to Operate the Air Pollution Control Officer shall make a determination of compliance based on the conditions established in the Authority to Construct. Conditions which have not been met at the time the Permit to Operate is proposed for issuance shall be incorporated into the Permit to Operate.

D.8 PERMIT TO OPERATE - OFFSET CONDITIONS:

D.8.a As a condition for the issuance of a Permit to Operate, any stationary source which provides emissions offsets shall be subject to enforceable permit conditions containing specific operational and emissions limitations, which ensure that the emissions reductions will be provided in accordance with the provisions of this regulation and shall continue for the reasonably expected life of the proposed source. Where the source of offsets is not subject to a permit, a written contract shall be required between the applicant for a Permit to Operate and the owner or operator of such source, which contract, by its terms, shall be enforceable by the Air Pollution Control Officer. The permit and contract shall be

submitted to the Air Resources Board for review and comment. A violation of the emiss limitation provisions of any such contract s be chargeable to the applicant.

D.8.b Offsets required as a condition of an Authority to Construct or a Permit to Operate shall commence not later than the date of initial operation of the new or modified emissions unit, except that where a new or modified emissions unit is a replacement for an existing emissions unit on the same or contiguous property, the Air Pollution Control Officer may allow a maximum of 90 days as a start-up period for simultaneous operation of the existing emissions unit and the replacement emissions unit.

D.9 POWER PLANTS: This section shall apply to all power plants proposed to be constructed in the District and for which a Notice of Intention (NOI) or Application for Certification (AFC) has been accepted by the California Energy Commission.

D.9.a Within 14 days of receipt of a Notice of Intention, the Air Pollution Control Officer shall notify the Air Resources Board and the California Energy Commission of the District's intent participate in the Notice of Intention proceed If the District chooses to participate in t Notice of Intention proceeding, the Air Pollution Control Officer shall prepare and submit a report to the California Air Resources Board and the California Energy Commission prior to the conclusion of the nonadjudicatory hearing specified in Section 25509.5 of the California Public Resources Code. That report shall include, at a minimum:

D.9.a.1 a preliminary specific definition of Best Available Control Technology for the proposed facility;

D.9.a.2 a preliminary discussion of whether there is substantial likelihood that the requirements of this regulation and all other District rules and regulations can be satisfied by the proposed facility;

D.9.a.3 a preliminary list of conditions which the proposed facility must meet in order to comply with this regulation or any other applicable district rules or regulations.

The preliminary determinations contained in the

report shall be as specific as possible within the constraints of the information contained in the Notice of Intention.

D.9.b Upon receipt of an Application for Certification for a power plant, the Air Pollution Control Officer shall conduct a determination of compliance review. This determination shall consist of a review identical to that which would be performed if an application for a authority to construct had been received for the power plant. If the information contained in the Application for the Certification does not meet the requirements of this regulation, the Air Pollution Control Officer shall, within 20 calendar days of receipt of the Application for Certification, so inform the California Energy Commission, and the Application for Certification shall be considered incomplete and returned to the applicant for resubmittal.

D.9.c The Air Pollution Control Officer shall consider the Application for Certification to be equivalent to an application for a authority to construct during the determination of compliance review, and shall apply all provisions of this regulation which apply to applications for a permit to construct.

D.9.d The Air Pollution Control Officer may request from the applicant any information necessary for the completion of the determination of compliance review. If the Air Pollution Control Officer is unable to obtain the information, the Air Pollution Control Officer may petition the presiding Commissioner of the California Energy Commission for an order directing the applicant to supply such information.

D.9.e Within 180 days of accepting an Application for Certification as complete, the Air Pollution Control Officer shall make a preliminary decision on:

D.9.e.1 whether the proposed power plant meets the requirements of this regulation and all other applicable district regulations; and

D.9.e.2 in the event of compliance, what permit conditions will be required including the specific Best Available Control Technology requirements and a description of required mitigation

measures.

The preliminary written decision under Subsection D.9.e shall be treated as a preliminary decision under Section D.2 of this regulation, and shall be finalized by the Air Pollution Control Officer only after being subject to the public notice and comment requirements of Sections D.2 and D.3. The Air Pollution Control Officer shall not issue a determination of compliance unless all requirements of this regulation are met.

D.9.f Within 240 days of filing date, the Air Pollution Control Officer shall issue and submit to the California Energy Commission a determination of compliance or, if such a determination cannot be issued, shall so inform the California Energy Commission. A determination of compliance shall confer the same rights and privileges as an authority to construct only when and if the California Energy Commission approves the Application for Certification, and the California Energy Commission certificate includes all conditions of the determination of compliance.

D.9.g Any applicant receiving a certificate from the California Energy Commission pursuant to this section and in compliance with all conditions of the certificate shall be issued a permit to operate by the Air Pollution Control Officer.

E. CALCULATIONS

E.1 Purpose: The Following calculations procedure shall be used to determine:

E.1.a the emissions change for all new or modified emissions units, and

E.1.b the quantity of offsets required, and

E.1.c actual emissions reductions (AERs) for shutdowns and modified emissions units, and

E.1.d the stationary source potential to emit

E.2 Definitions: The following terms are used in the calculations procedure and are defined as follows:

E.2.a CONTROL EFFICIENCY: The estimated control efficiency of the proposed air pollution control technology which will be incorporated, by means enforceable permit condition(s), in the authority to construct and permit to operate. Emissions

reductions attributed to lowering throughput rates or operating reductions attributed to lowering throughput rates or operating hours shall not be considered in determining control efficiency.

E.2.b HISTORIC ACTUAL EMISSIONS: Actual emissions from an existing emissions unit averaged over three consecutive years immediately preceding the date of application. Where an emissions unit has been in operation for less than three years, a shorter averaging period of at least one year may be used providing it represents the full operational history of the stationary source. The historic actual emissions from emissions units which have been in operation for less than one year shall be equal to zero for the purpose of this calculation procedure. Historic actual emissions are to be calculated in pounds per quarter for each calendar quarter. Historic actual emissions in quarters 2 or 3 may be lowered by transferring these emissions to quarters 1 or 4, provided that the resulting emissions in quarters 1 or 4 are no higher than the higher of quarters 2 or 3.

E.2.c HISTORIC EMISSIONS: The potential to emit of an existing emissions unit prior to modification. For a new emissions unit historic emissions are equal to zero.

E.2.d POTENTIAL TO EMIT: The maximum daily capacity of an emissions unit to emit a pollutant under its physical and operational design. Any physical or operational limitation on the daily capacity of the unit to emit a pollutant, including pollution control equipment and restrictions in hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on a daily emissions is incorporated into the applicable permit as daily emissions limitations.

E.2.e PROPOSED EMISSIONS: The potential to emit for a new or postmodification emissions unit.

E.3 Calculating Emissions Changes: The emissions change for a new or modified emissions unit shall be calculated, in pounds per day, by subtracting historic emissions from proposed emissions for each calendar quarter.

Emissions Change = proposed emissions - historic emissions

E.3.a If the emissions change is positive, follow the procedures in Section E.4 to determine the amount

of offsets required.

E.3.b If the emissions change is negative, follow the procedures in Section E.5 to determine if actual emissions reductions are generated.

E.3.c If the emissions change is equal to zero, no further calculations are required.

E.4 Calculation of Offsets Required: In determining the quantity of offsets required, the emissions change for an emissions unit, as determined in Section E.3, shall be adjusted pursuant to the requirements of C.2, C.3 and C.4.

E.4.a Calendar quarter calculations used for determining offsets required and AERs shall be determined as follows:

E.4.a.1 the emissions change for an emissions unit multiplied by the number of permitted operating days in each calendar quarter; or

E.4.a.2 the emissions unit's potential to emit on a quarterly basis, provided that addition to daily emissions limitatic the Authority to Construct and Permit Operate contain enforceable conditions which limit emissions from the emissions unit for each calendar quarter.

E.5 Calculation of Actual Emissions Reductions: Actual emissions reductions (AERs) resulting from modifications to existing emissions units shall be calculated by subtracting proposed emissions from historic emissions.

Only positive values so calculated, provided all other applicable requirements are met, may qualify as AERs. Prior to use as offsets, all AERs must qualify for deposit into the District's Emissions Reduction Credit Bank.

E.5.a Shutdown of an emissions unit

AER = Historic actual emissions

E.5.b Modification consists solely of application of control equipment or implementation of more efficient process

AER = Historic actual emissions * control efficiency

E.5.c Other modifications

AER = Historic actual emissions - proposed emissions

Proposed emissions for the purpose of determining AERs are to be established in pounds per quarter for each calendar quarter and calculated pursuant to Section E.4.a of this part.

E.6 Calculation of Stationary Source Potential to Emit: The potential to emit for a stationary source shall be equal to the sum of potentials to emit for Permits to Operate (or Authority to Construct for emissions units for which a Permit to Operate has not been issued) issued prior to September 7, 1993, for each emissions unit within a stationary source. In addition, emissions increases from new or modified emissions units, occurring on or after September 7, 1993, shall be added to the sum of potentials to emit for existing emissions units. In no case shall the potential to emit for a stationary source be adjusted for actual emissions reductions which occur after September 7, 1993.

F. AIR QUALITY IMPACT ANALYSIS

F.1 In no case shall emissions from a new or modified emissions unit, cause or make worse the violation of an ambient air quality standard. The Air Pollution Control Officer may require an applicant to use an air quality model to estimate the effects of a new or modified emissions unit. For the purpose of performing an air quality impact analysis the following shall apply:

F.1.a Air quality models shall be consistent with the requirements contained in the most recent edition of EPA's "Guidelines on Air Quality Models, OAQPS 1.2-080", unless the Air Pollution Control Officer finds that such model is inappropriate for use. After making such a finding the Air Pollution Control Officer may designate an alternate model only after allowing for public comment and only with the concurrence of the Air Resources Board and the Environmental Protection Agency. All modeling costs associated with the siting of a new or modified emissions unit shall be borne by the applicant.

F.1.b In performing an air quality impact analysis, if the proposed stack height is higher than is dictated by good engineering practices, the actual height used for the purposes of modeling shall be calculated in accordance with good engineering practices.

G. COMMUNITY BANK ALLOWANCE

G.1 The Community Bank is established by the District Board for the purpose of providing offsets not otherwise or readily available to stationary source categories specified in Rule 207.2 (Community Bank and Priority Reserve) and thus allowing sources to comply with the offset provisions of Subsection C.2 of this rule.

G.2 The Community Bank is funded by preserving a portion of all Actual Emission Reductions calculated in accordance with Section E of this rule. A registry of community bank offset credits shall be maintained by the District and shall be made available for public inspection. The Community Bank shall be funded by the following:

G.2.a 10 percent of all onsite actual emissions reductions created after September 7, 1993.

G.2.b The excess offsets required and obtained pursuant to offset ratios for all offsets required since September 7, 1993. For the purpose of this Subsection, excess offsets are all actual emissions reductions in excess of a 1 to 1 ratio, on the basis of a pound of reductions per pound of increase in emissions, provided as offsets.

G.2.c Any unclaimed actual emission reduction credits since September 7, 1993, which are real, enforceable, quantifiable, and permanent.

G.2.d Any emissions reductions specifically identified in the California Clean Air Act Plan for funding the Community Bank.

RULE 404 - PARTICULATE MATTER EMISSIONS - PROCESS WEIGHT:

No person shall discharge in any one hour from any source particulate matter in total quantities in excess of the amount shown in the following table:

TABLE

*PROCESS WT/HR (LBS)	MAX WEIGHT DISCH/HR (LBS)	*PROCESS WT/HR (LBS)	MAX WEIGHT DISCH/HR (LBS)	*PROCESS WT/HR (LBS)	MAX WEIGHT DISCH/HR (LBS)
50	.24	2100	4.14	5500	7.03
100	.46	2200	4.34	6000	7.37
150	.66	2300	4.44	6500	7.71
200	.85	2400	4.55	7000	8.05
250	1.03	2500	4.64	7500	8.39
300	1.20	2600	4.74	8000	8.71
350	1.35	2700	4.84	8500	9.03
400	1.50	2800	4.92	9000	9.36
450	1.63	2900	5.02	9500	9.67
500	1.77	3000	5.10	10000	10.00
550	1.89	3100	5.18	11000	10.63
600	2.01	3200	5.27	12000	11.28
650	2.12	3300	5.36	13000	11.89
700	2.24	3400	5.44	14000	12.50
750	2.34	3500	5.52	15000	13.13
800	2.43	3600	5.61	16000	13.74
850	2.53	3700	5.69	17000	14.36
900	2.62	3800	5.77	18000	14.97
1000	2.80	3900	5.85	19000	15.58
1100	2.97	4000	5.93	20000	16.19
1200	3.12	4100	6.01	30000	22.22
1300	3.26	4200	6.08	40000	28.30
1400	3.40	4300	6.15	50000	34.30
1500	3.54	4400	6.22	60000	40.00
1600	3.66	4500	6.30	or	
1700	3.79	4600	6.45	more	
1800	3.91	4800	6.52		
1900	4.03	4900	6.60		
2000	4.14	5000	6.67		

*To use the above table, take the process weight per hour as such is defined in Rule 101. Then find this figure on the table, opposite which is the maximum number of pounds of contaminants which may be discharged into the atmosphere in any one hour. As an example, if "A" has a process which emits contaminants into the atmosphere and which process takes 3 hours to complete, he will divide the weight of all materials in the specific process, in this example, 1,500 lbs. divided by 3 giving a process weight per hour of 500 lbs.

The table shows the "A" may not discharge more than 1.77 lbs. In any one hour during the process where the process weight per hour falls between figures in the left hand column, the exact weight of permitted discharge may be interpolated.

STATE OF CALIFORNIA - CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN • REGION 7
73-720 FRED WARING DR., SUITE 100
PALM DESERT, CA 92260
Phone (619) 346-7491
FAX (619) 341-6820

JUN 14 1995

Ms. Tizita Bekele, Project Manager
Department of Toxic Substances Control
Region No. 4, Federal Facilities Unit "A"
245 West Broadway, Suite 245
Long Beach, California, 90802-4444

RE: Applicable or Relevant and Appropriate Requirements for the Naval Air Facility El Centro, California, Sites 1, 2, 3, 4, and 8; Imperial County, California

This letter is in response to your solicitation for State applicable or relevant and appropriate requirements (ARARS), dated May 1, 1995 for the Naval Air Facility El Centro (NAF El Centro), Imperial County, California.

Please be aware that because the facility is non-NPL and there is no FFSRA for this facility, there is no time limit for submittal of ARARs from the Regional Board.

After an initial review of Sites 1,2,3,4, and 8, staff has determined the following ARARs will apply:

Citation - California Water Code, Division 7, Section 13000 et seq. (Porter-Cologne Water Quality Control Act) Authorizes Regional Boards to take enforcement action to protect water quality.

The Regional Board enforces the following ARARs which are, by definition of ARARs in the CERCLA process, relevant and appropriate for the site:

Citation - California Code of Regulations, Title 23, Division 3, Chapter 15 (Discharges of Waste to Land)

Citation - Federal Clean Water Act, individual National Pollutant Discharge Elimination System (NPDES) storm water permit.

The planed Removal Actions should be designed to reduce the possibility of a release of wastes or contaminants to the environment. Please provide a Workplan of the proposed Removal Actions for Regional Board approval.

If you have any questions regarding this matter, please contact Liann Chavez at (619) 776-8937.

Robert E Perdue

ROBERT PERDUE
Senior Engineering Geologist

LC/pkg

File: DOD DSM NAFEC 1.5

Department of Toxic Substances Control

Edwin F. Lowry, Director
5796 Corporate Avenue
Cypress, California 90630

Winston H. Hickox
Agency Secretary
California Environmental
Protection Agency

Gray Davis
Governor

November 28, 2001

Mr. Fred Rivera
Installation Restoration Program Manager
Public Works Department (Code 341)
Naval Air Facility El Centro
El Centro, California 92243-5001

REQUEST FOR APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR INSTALLATION RESTORATION (IR) SITE 1, MAGAZINE ROAD LANDFILL, NAVAL AIR FACILITY EL CENTRO (NAFEC), IMPERIAL COUNTY, CALIFORNIA

Dear Mr. Rivera:

The Department of Toxic Substances Control (DTSC) received a request from the Navy to re-submit potential State chemical-specific, action-specific, and location-specific ARARs for IR Site 1 - Magazine Road Landfill.

The Navy is preparing a feasibility study report to develop and evaluate remedial action alternatives that could be implemented where unacceptable risks are identified. Site 1 has been investigated under several reports such as the Preliminary Assessment/Site Inspection (PA/SI 1987), a Solid Waste Water Quality Assessment Test (SWAT 1993), a Groundwater Monitoring report (June 2001), and a Remedial Investigation report (October 2001).

As the lead regulatory agency for this facility, DTSC will solicit ARARs from other State agencies per your request. As a reminder, the ARARs submittal process is open and modifications to ARARs through out the site clean-up process is possible. DTSC submitted an ARARs list that was included in several reports for Site 1 including the Action Memorandum/Removal Action Wordplay (AM/RAW) dated February 1997. DTSC's ARARs remain applicable; however they need to be re-evaluated and analyzed according to the selected remedy in the Feasibility Study report to be submitted in January 2002. Enclosed are ARARs from the Integrated Waste Management Board (IWMB) and from the Regional Water Quality Control Board (RWQCB). The enclosed ARARs are modifications to the already identified ARARs in the AM/RAW which are applicable under the current site conditions.

We are looking forward to working with you to expedite the removal activities at NAFEC. If you have any questions, please contact me at (714) 484-5445.

Sincerely,

Isaac Hirbawi
Hazardous Substances Engineer
Office of Military Facilities
Southern California Branch

Enclosures

cc: Mr. James Hoyle
Remedial Project Manager, Code 5DEN.JH
Naval Facilities Engineering Command
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Mr. Mike Gonzales
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Mr. David Virginia
Environmental Specialist 1
California Regional Water Quality
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Palm Desert, California 92208

Ms. Marie T. McCrink, RG, CH
Site Mitigation Program
Geologic Services Unit
8800 Cal Center Drive
Sacramento, California 95826-3269

cc: Mr. Scott Humpert
Associate Waste Management Engineer
California Integrated Waste Management Board
P.O. Box 4025
Sacramento, California 95812

Mr. Scott Donovan
Project Manager - Bechtel National
1230 Columbia St.-Suite 400
San Diego, California 92101

State ARARs for Solid Waste Disposal Site Closure and Postclosure Maintenance

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21130 Ch. 3, Subch. 5, Art. 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Emergency Response: potential emergency conditions that may exceed the design of the site and could endanger the public health or environment must be anticipated. Response procedures for these conditions must be addressed in the ROWRA plans.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2, Scope & Applicability pursuant 27 CCR 21100.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21135 Ch. 3, Subch. 5, Art. 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Site Security: all points of access to the site must be restricted, except permitted entry points. All monitoring, control, and recovery systems shall be protected from unauthorized access.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2. Scope & Applicability pursuant 27 CCR 21100	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21137 Ch. 3, Subch. 5, Art. 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Structure Removal: site structures and leachate and gas control systems not intended for re use will be dismantled and removed at the time of closure to protect public health and safety.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2. Scope & Applicability pursuant 27 CCR 21100	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21140 Ch. 3, Subch. 5, Art. 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Final Cover: the final cover shall function with minimum maintenance and provide waste containment to protect public health and safety by controlling at a minimum, vectors, fire, odor, litter and landfill gas migration. The final cover shall also be compatible with postclosure land use.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2. Scope & Applicability pursuant 27 CCR 21100	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21142 Ch. 3, Sub. 5, Article 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Final Grading: final grades must be designed and maintained to reduce impacts to health and safety and take into consideration any postclosure land use.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2. Scope & Applicability pursuant 27 CCR 21100	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21145 Ch. 3, Subch. 5, Art. 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Slope Stability: the operator shall ensure the integrity of final slopes under both static and dynamic conditions to protect public health & safety and prevent damage to postclosure land uses, roads, structures, utilities, gas monitoring and control systems, leachate collection and control systems to prevent public contact with leachate, and prevent exposure of waste.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2. Scope & Applicability pursuant 27 CCR 21100.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21150 Ch. 3, Subch. 5, Art. 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Drainage and Erosion Control: the drainage and erosion control system shall be designed and maintained to ensure integrity of postclosure land uses, roads, and structures; to prevent public contact with waste and leachate; to ensure integrity of gas monitoring and control systems; to prevent safety hazards; and to prevent exposure of waste.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Sub. 5, Art. 2. Scope & Applicability pursuant to 27 CCR 21100	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21160 Ch. 3, Sub. 5, Article 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Landfill Gas Control and Leachate Control: landfill gas control shall be implemented and maintained; leachate must be collected and controlled in a manner which prevents public contact and controls vectors, nuisance and odor.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2, Scope & Applicability pursuant 27 CCR 21100. The rule does not intend that subsurface leachate monitoring and collecting systems need to be added to existing landfills unless leachate production and/or accumulation is evident.	For closing sites
California Integrated Waste Management Act of 1989	27 CCR 20921-20937 Ch. 3, Sub. 4, Article 8, Closure & Postclosure Maint.	Applicable or Relevant and Appropriate	Gas Monitoring and Control During Closure and Postclosure: to protect public health and safety and the environment, landfill gases generated at a disposal site will be controlled to ensure that: 1) concentrations of	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5,	For closing sites

State ARARs for Solid Waste Disposal Site Closure and Postclosure Maintenance

Source	Standard, Requirement, Criterion, or Limitation	ARAR Status	Description	Comment	Associated Site
PRC 40502 & 43020	Standards for Disposal Sites and Landfills		methane gas do not exceed 1.25% by volume in air within on-site structures, 2) concentrations of methane do not exceed 5% by volume in air at the property or designated landfill boundary and 3) trace gases do not pose an acute or chronic exposure to toxic or carcinogenic compounds	Art. 2, Scope & Applicability pursuant 27 CCR 21100	
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21180 Ch. 3, Sub. 5, Article 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Postclosure Maintenance: the landfill must be maintained and monitored for no less than 30 years following closure.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 6, Art. 2, Scope & Applicability pursuant 27 CCR 21100.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43020	27 CCR 21190 Ch. 3, Sub. 6, Article 2, Closure & Postclosure Maint. Standards for Disposal Sites and Landfills	Applicable or Relevant and Appropriate	Postclosure Land Use: Site Closure Design shall show one or more proposed uses of the closed site or show development that is compatible with open space. Changes in postclosure land use must be approved by the appropriate State agency prior to implementation.	Closure or Postclosure Maintenance Standards for Disposal Sites and Landfills of 27 CCR, Ch. 3, Subch. 5, Art. 2, Scope & Applicability pursuant 27 CCR 21100	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43509	27 CCR 21800 Ch. 4, Subch. 4, Final Closure Plan Contents	Relevant and Appropriate	Provides the content requirements for closure plans for solid waste disposal sites.	Applies to solid waste disposal sites that received waste after November 1990. Relevant and appropriate for closing sites that did not receive waste after November 1990	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43509	27 CCR 21830 Ch. 4, Subch. 4, Final Closure Plan Contents	Relevant and Appropriate	Provides the content requirements for postclosure maintenance plans for solid waste disposal sites.	Applies to solid waste disposal sites that received waste after November 1990. Relevant and appropriate for closing sites that did not receive waste after November 1990.	For closing sites
California Integrated Waste Management Act of 1989 PRC 40502 & 43509	27 CCR 21840 Ch. 4, Subch. 4, Final Closure Plan Contents	Relevant and Appropriate	Provides the content requirements to obtain certification that the solid waste disposal site has closed pursuant to state standards.	Applies to solid waste disposal sites that received waste after November 1990. Relevant and appropriate for closing sites that did not receive waste after November 1990	For closing sites

27 CCR - California Code of Regulations, Title 27 ARAR - applicable or relevant and appropriate requirement ROD - Record of Decision RD/RA - remedial design/remedial action

POTENTIAL STATE CHEMICAL-SPECIFIC ARAR'S

Requirement	Prerequisites	Citation	ARAR Determination	Comments
GROUNDWATER, SURFACE WATER, AND SOIL				
State and Regional Water Quality Control Board Authorizes the state and regional water boards to establish in Water Quality Plans beneficial uses and numerical and narrative standards to protect both surface and groundwater quality; authorizes regional water boards to issue permits for discharges to land or surface or groundwater that could affect water quality, including National Pollutant Discharge Elimination Permits, and to take enforcement action to protect water quality.	Existence of surface or groundwater	California Water Code, Division 7, Section 13241, 13243, 13263(a), and 13380 (Porter-Cologne Water Quality Control Act)	Applicable	Applicable since groundwater has potentially been impacted at the site, and the site is currently under the provisions of Waste Discharge Requirements.
		Other provisions of Porter-Cologne Water Quality Control Act	Relevant and Appropriate	
Describes the water basins in Colorado River Basin Region, establishes beneficial uses of groundwater and surface water, establishes water quality objectives, including narrative and numerical standards, establishes implementation plans to meet water quality objectives and protect beneficial uses, and incorporates state-wide water quality control plans and policies.	Existence of surface or groundwater	Comprehensive Water Quality Control Plan for the Colorado River (Water Code 13240)	Applicable	Applicable since RI will address long term groundwater monitoring at Site 1.
Incorporated into all regional Board Basin Plans; designates all groundwater and surface water of the state as drinking water except where total dissolved solids are greater than 3,000 parts per million, the well yield is less than 200 gallons per day from a single well, the water is a geothermal resource or in a water conveyance facility, or the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.	Existence of surface or groundwater	State Water Resources Control Board Resolution No. 88-63 (Sources of Drinking Water Policy)	Applicable	

POTENTIAL STATE ACTION-SPECIFIC ARAR'S

Requirement	Prerequisites	Citation	ARAR Determination	Comments
California Code of Regulations, Division 2, Title 27				
In 1998 the State Water Quality Control Board, Title 23 regulations were combined with CIWMB Title 14 regulations. The Combined regulations are now referred to as Division 2, Title 27. CCR Title 23 Regulations were already noted as State action-specific ARAR's Site 1 in the RA released in 1997.			Applicable	

As the groundwater at the site is being addressed, these regulations are still ARAR's, however the requirement like will need to be ammended to reflect the changes to the regulations.